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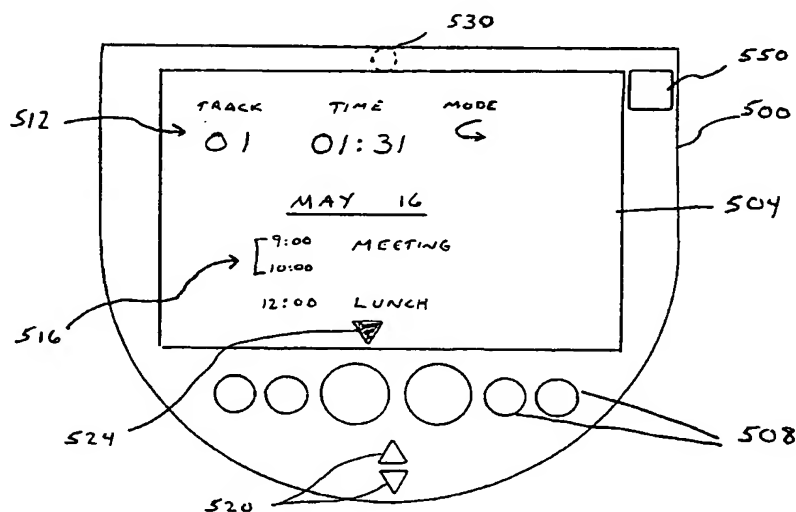
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(54) Title: NETWORK COMMUNICATIONS ENTERTAINMENT SYSTEM AND METHOD



(57) Abstract: A network communications entertainment system and method integrates functionality of popular handheld electronic devices, such as handheld computers, digital cameras, game players, and CD players, while sharing potential costly resources, such as a full size, flat panel display (Fig. 5). A handheld device can be joined with a network station to provide a more expansive media amplification device and to provide access to a network. Various forms of the systems also comprise a digital camera coupled with a handheld computer, use RF identification to automatically respond with content desired by a known user, allow removability of only the handheld computer portion of the invention, allow direct connection between the portable device and a network, and feature an indentation in the casing to make the portable device easier for a user to grip.

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NETWORK COMMUNICATIONS ENTERTAINMENT SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority from United States Provisional Application
5 No. 60/305,606, filed July 17, 2001.

TECHNICAL FIELD

The present invention relates to personal electronic computing and
entertainment devices. More particularly, the present invention relates to a system and
10 method for integrating computing, communications, networking, and/or other media
devices.

BACKGROUND OF THE INVENTION

The costs of manufacturing portable electronics devices have decreased
15 products so much that it is possible for more people to own more of these desirable devices.
Although laptop computers remain relatively high cost items, devices such as handheld
computers, compact disc (CD) players, cassette players, downloadable media players, DVD
players, digital cameras, game players, and similar devices have become inexpensive
enough for most people to own some or all of these.

20 Moreover, like portable personal computers, these personal electronics
devices are not only less expensive, but their functionality has reached a point where they
can replace many conventional non-portable devices. This makes it possible for an owner
of such a device to own only a portable version of such a device rather than own a portable
device and non-portable device. For example, a portable CD player can generate audio
25 source signals having comparable fidelity to that of much heavier and larger component
stereo CD player. If a portable CD player can be connected to a stereo system or a set of
speakers, the owner of the portable CD player could replace and displace the component
stereo CD player altogether. This might be even more ideal in the case of downloadable
media players, commonly termed "MP3 Players" because most use files of MP3

compression. Although a CD can be removed from a portable CD player and be placed into a component stereo system, some MP3 players do not use removable media storage. Thus, to listen to an MP3 player in a home or business environment, the MP3 player would have to be connected to an external device to access its content.

5 On the other hand, some of these portable devices need to be coupled with a larger device to fully realize their functionality. Digital cameras, to give one example, typically must be connected by cables to a personal computer, or must use removable media which must be transferred to a personal computer in order to view the captured images on other than on the small screen on the camera. A personal computer is needed to view the
10 images on a large screen, route them to a printer, or transmit them over a network. Similarly, most downloadable media players must be connected with a personal computer to download content to the player. In addition, many handheld computers must be synchronized with a personal computer to backup their content, to install software, or to provide Internet access to access data needed for handheld applications. Thus, owning the
15 handheld computer does not eliminate the need for a larger computing device. Furthermore, to synchronize the handheld computer with a personal computer, additional hardware is needed, such as a synchronization cradle and an interface cable to connect to the personal computer. Thus, the proliferation of personal consumer electronics devices largely means that a user must keep track of and make space for more devices, rather than
20 fewer devices.

In those cases where a portable electronics device might replace a larger device, the process of connecting the portable device to make it suitable for home or office use might be so cumbersome that it is more desirable to have equivalent portable and non-portable devices. For example, taking the example of connecting a portable CD player to a
25 home stereo may require cables and some skills which some users do not have, or at least a willingness to go through the tedium of connecting the player to the stereo with cables.

Overall, having all these devices costs a lot of money, and results in users of these devices owning comparable, equivalent portable and non-portable devices. To interconnect them requires skill or at least some patience. Further, all these devices take up

space. Moreover, because they are independent devices not designed to work together, certain features or functions may be duplicated between them, or prohibits such interaction from occurring.

What is needed is a way to take portable electronics devices, combine
5 features and functions when possible to save users time, space, and money. Specifically, if there were a way to combine the features and functions of multiple devices, it would save users and would-be users time and would alleviate the burden of carrying two or more portable devices, even if combined or attached as one device, when one could suffice. It would save the users the space required to have multiple differentiating devices that only
10 provide a limited scope of features or uses, as well as duplicating portable device functions.

It is to this object that the present invention is directed.

SUMMARY OF THE INVENTION

The present invention combines commonly used personal electronics
15 devices to eliminate redundancy between those devices, to reduce cost and size, and/or to ease interconnectivity by eliminating the need for intermediate connection devices. Different embodiments of the present invention combine different devices and, therefore, different features.

One variation of the present invention combines a media player, such as a
20 downloadable media player, a CD player, cassette player, or a DVD player, as well as a handheld computer, and possibly other devices such as a digital camera in a single unit, the resulting portable device coupling directly to a network station without any cradle or port wires allows the portable device or a plurality of portable devices to transduce media signals through speakers based in that network station. The network station also provides a
25 conduit for the portable device to access a network, such as the Internet to receive and send network data. A large display screen on the network station allows content from the network or from the portable device or devices to be comfortably viewed by a user.

A variation of the present invention combines a handheld computer and a
digital camera. A screen display which supports the visual output functions of the handheld

computer can double as a viewing screen for the digital camera, as memory and/or storage of the handheld computer can be used to support the memory and storage needs of the digital camera system. This variation of the present invention can work with a network station for the portable device to access a network, such as the Internet to receive and send network data. A display screen on the portable device, through which digital photographs and handheld computer functions are accessed and monitored, when coupled to the network station allows visual content received from the network to be viewed by a user. Other functional units also could be added to this device, such as a music player, a cellular telephone, a game player, or a pager.

Another variation of the present invention combines a handheld computer and a digital camera. A screen display which controls the handheld computer can double as a viewing screen for the digital camera, as memory and/or storage of the handheld computer can be used to support the memory and storage needs of the digital camera system. This variation of the present invention can work with a network station to allow the portable device to transduce media signals through speakers based in that network station, as well as to provide a conduit for the portable device to access a network, such as the Internet to receive and send network data. A display screen on the portable device, through which media player and handheld computer functions are accessed and monitored, when coupled to the network station allows visual content received from the network to be viewed by a user. Other functional units also could be added to this device, such as a CD player, game player, music player, or pager. By contrast, if the user is by or near the network station, the user could use the display of the network station as his/her medium for interaction.

Another variation of the present invention is a network station having a display, at least one transducer to allow a user to see and/or hear media content from an internal media player, and a radio frequency identification (RFID) sensing device which reacts to RFID tags carried by users of the network station. The network station also provides a conduit to access a network, such as the Internet to receive and send network data which can be stored or accessed by the user through the display and the transducer.

The RFID sensing device, upon detecting and authenticating an authorized RFID tag in the vicinity, can direct the network station to generate media content or access network content according to information profiles about the user referenced to as "user preferences," associated with the RFID tag stored by the network station, as well as the portable device.

- 5 The network station, depending on preferences associated with the RFID tag holder, could launch a browser and retrieve the RFID tag holder's e-mail to that device.

Another variation of the present invention is a network station having a removable display and at least one transducer to allow a user to see and/or hear media content from an internal media player. The network station also provides a conduit to
10 access a network, such as the Internet to receive and send network data which can be stored or accessed by the user through the display and the transducer. The removable display screen is equipped with storage and logic devices so that it can be removed from the network station and used as a handheld computer or similar hardware device.

Another variation of the present invention is a portable device combining a
15 media player, such as a downloadable media player, a CD player, a game player, a phone, or a DVD player, and a handheld computer in a single unit, along with a network interface that allows the portable device to access a network, such as the Internet or phone network, to receive and send network data. A display screen on the portable device, through which media player and handheld computer functions are accessed and monitored.

20 Another variation of the present invention is a portable electronics device having an indentation on a surface, or extension to the surface, on a side away from controls or display devices to receive at least one finger or thumb of the user to enable the user to more easily and securely hold onto the device.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A is a front view of one embodiment in which a portable device features a media player and a handheld computer.

Figure 1B is a front view of the embodiment shown in Figure 1A with the portable device docked with a network station.

Figure 1C is a block diagram of the components of the embodiment shown in Figure 1B in which the portable device is removably coupled with the network station.

Figure 2A is a front view of one embodiment of the present invention in which a portable device features a handheld computer and digital camera functions.

5 Figure 2B is a side view of one embodiment of the present invention in which a portable device features a handheld computer and digital camera functions.

Figure 3 is a front view of one embodiment having at least one portable device docked with a network station, and radio frequency identification (RFID) sensing and tag devices to control generation of content based on user preferences, and desired
10 interactions associated with the RFID tag holder.

Figure 4A is a front view of one embodiment in which a network station features a removable display capable of acting as a handheld computer.

Figure 4B is a front view of the removable display of the embodiment shown in Figure 4A.

15 Figure 5 is a front view of one embodiment in which a portable device features a media player, a handheld computer, a digital camera, and a network interface.

Figure 6A is an underside view of one embodiment in which a portable device features an indentation to enable a user to better hold the device.

Figure 6B is a side view of the embodiment shown in Figure 6A in which a
20 portable device features an indentation to enable a user to better hold onto the device.

Figure 7A is an underside view of one embodiment in which a portable device features an extension from the surface to enable a user to better hold the device.

Figure 7B is a side view of the embodiment shown in Figure 7A in which a portable device features a finger extension to enable a user to better hold onto the device.

25 Figure 7C is a side view of the embodiment shown in Figure 7A with a user's finger engaging the extension to better hold onto the device

DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present invention are directed toward integrating the functions of personal electronics devices to provide cost-effective, compact, multi-function portable devices, which can be, but do not necessarily need to be, coupled with a base station to provide enhanced functions. Embodiments of the present invention are also directed toward cost-effective, compact, multi-function devices for a home or office. One skilled in the art will understand, however, that the present invention may be practiced without several of the details described in the following description. Moreover, in the description that follows, it is understood that the figures related to the various embodiments are not to be interpreted as conveying any specific or relative physical dimensions, and that specific or relative physical dimensions, if stated, are not to be considered limiting unless the claims expressly state otherwise. Further, illustrations of the various embodiments when presented by way of illustrative examples are intended only to further illustrate certain details of the various embodiments, and shall not be interpreted as limiting the scope of the invention.

A first embodiment of the present invention combines a media player, such as a downloadable media player, a CD player, or a DVD player, and a handheld computer in a single portable unit. Figure 1A shows one embodiment of the portable device 100 which features a combination CD player and handheld computer. The portable device 100 could be designed with the familiar hinged clamshell shape commonly used in portable CD players which receives a media disc, such as a CD, onto a spindle on which the media disc can be rotated and read (not shown) or rotated to insert or take out the media as a CD. As shown in Figure 1A, the portable device 100 prominently features a display 104 and a plurality of function control buttons 108. The portable device 100 also features an output jack (not shown) to connect headphones or a similar device as media players typically do, and a network station interface (not shown) whose function will be explained below.

As will be appreciated, both known CD players and handheld computers have display screens to allow users to monitor or control the operation of such devices. In CD players, these displays typically are alphanumeric-only displays which convey

information about the disc being played, such as the track number, elapsed time per track, total playing time per disc, etc. A CD player display also may include icons to indicate whether the CD player is playing a CD, paused, stopped, low on power, programmed to repeat tracks, and other familiar signals. By contrast, a handheld computer typically has an all points addressable display which is software addressable to display text, images, icons, and other symbols familiar to users of personal or handheld computers. Typical handheld computer displays also are touch-sensitive to allow actuation of application specific functions, to mark text, and other functions which one might activate by dragging and clicking a mouse with a portable or desktop computer or using a keyboard.

One aspect of this embodiment of the present invention is providing an integrated display 104. A display capable of supporting functions of a handheld computer can provide the simpler functions of a typical CD player's display, or that of a digital camera or a cellular telephone, for example. As shown in Figure 1A, the display can show information about the CD playing at 112, including track information, time information, and playing mode, for example, while at the same time showing information from a handheld computer application, such as schedule information at 116 or more simultaneous display function capabilities. The CD information 112 could include graphic icons of the artist, song, album cover, band logo, or other information rather than numeric information only, and can provide to the user visual content, such as a video or animation as past of or in addition to particular song or album. The CD information 112 could be hidden or moved to allow more space for handheld computer information 116 to be shown through software controls activated by function control buttons 108 or by touching active portions of the touch sensitive display 104 with a stylus or other suitable pointing device. Although a conventional stylus is not required, for the sake of simplicity, the term stylus shall be used to refer to whatever device, such as a pen cap, a finger nail, a paper clip, etc., is used to activate the touch sensitive functions of the display.

Alternatively, the CD information 112 and schedule information 116 could both continue to be supported simultaneously, and scroll keys 120, long familiar to handheld computer users, could be used to reveal more content from a desired application

such as the schedule application. Similarly, touch sensitive active areas on the display 104, such as the downward scroll icon 124 indicated could be actuated with a stylus to reveal more content, or even voice-activated scrolling and selections by the user.

The function control buttons 108, also familiar to handheld computer users, can be programmed as application specific. The function control buttons 108 could be used to control the functions of the CD player, and could trigger functions such as play, skip forward, pause, etc. When the CD player is not running or runs as a background application to a handheld computer function, these same function control buttons 108 might, in the context of the example of the scheduling application, trigger entry of a new appointment, to turn off an alarm, or another function. Alternatively, as is familiar to many handheld computer users, these buttons might initiate other applications, such as to-do list managers, address/phone book directories, etc., while active application functions are activated solely through touch-screen initiated commands. By contrast, all such selections can be facilitated by voice commands to control all or functions of the device.

Figure 1B shows the portable device 100 docked with a network station 130 that has the ability to interact with the portable device 100, adding and enhancing the functions of the portable device. Most notably, in the embodiment shown, the network station 130 features a large display 132, one or more portable device interfaces (not shown), a network interface (not shown), speakers 134, and function control buttons 138. The portable device 100 interfaces communicably couples with network station interfaces (not shown) so that the devices 100 and 130 can function cooperatively. For example, through the portable device interface, the portable device 100 can connect with the network stations' data storage, and/or a network such as the Internet through the network interface (not shown) of the base station 130.

The network station 130 also provides docking stations for other portable devices, such as a digital camera 150, a radio or Internet radio 154, and a cassette player 158. Additional media or portable devices interfaces (not shown) can be made available for these devices. For example, the digital camera 150, when coupled to the network station 130 through a portable device interface could be configured for automatic or manual

downloading of photographs to storage devices in the network station 130. These photographs could then be viewed on the large display 132 of the network station. Similarly, an Internet radio 154 coupled with a portable device interface in the network station could add Internet radio function to the network station 130, as well as in a standalone, detached mode. It is also possible, along the lines of the portable device 100, that a device such as a cassette player 158 could be coupled with a handheld computer, and take advantage of the capabilities of the network station 130 in the same way as the handheld computer portion of the portable device 100.

It should be appreciated that, with such function available in a network station 130, a user or group of users may have one network station 130 and a plurality of personal devices 100. For example, each member of a family could have his or her own portable device 100, but share the network interface, storage, and other resources of the network station 130.

With portable devices coupled to the network station 130, a user can control the system's resources by using the function control buttons 138 on the network station 130. The user can also control system functions through touch-sensitive capabilities of the display 132. A keyboard (not shown) also could be added. The user could check e-mail, initiate media downloads, browse the World Wide Web, or similar functions on the display 132 which, when docked with the network station, serves as the display for the entire system, or could utilize the larger display comprised of the network station 130 to facilitate its interaction. It will be appreciated, therefore, that this display 104 not only serves multiple purposes for the portable device 100 in allowing the user to monitor both CD player and handheld computer functions, but can also serve as display when the portable device 100 and network device are fully integrated.

Figure 1B also shows the network station being equipped with speakers 134. The speakers 134, which can be driven by an amplification system (not shown) for greater volume than would be desired in a traditional, personal mode provided by the portable device. Accordingly, sound content from a CD, from the Internet, or other media can be experienced room-wide. These speakers 134 in the network station 130 therefore allow the

combination of the portable device 100 and the network station 130 to serve as a table-top stereo system, allowing a user to have both a portable stereo and a home or office stereo in this one cooperative device.

Many variations of this integration are possible. Considering the media
5 player in the portable device, instead of a CD player, the portable device 100 could include a DVD player, a downloadable media device, a wireless or wired phone, or other portable devices. The video content provided by the DVD player could be shown on the display 104 of the portable device 100 when it is used as such, or as part of the integrated device with the network station 130, on the full size display 132, using the speakers 134 to provide
10 sound output to potentially multiple viewers. The media player in the portable device also could play compressed MP3 or other music format disks, or the media player could be a downloadable media player with interchangeable memory devices. Similarly, the portable device 100 could include a cellular or wired telephone activated through the function control buttons 108 or touch-sensitive icons on the portable device display 104, or by voice
15 activation, commands, and selections.

Also, the network station 130 can provide other functions. The network station 130 can include storage for handheld computer applications or Internet applications, and all other portable devices. If the portable device 100 includes a cellular telephone, the speakers 134 of the network station 130 could allow the cellular phone to be used as a
20 speaker phone. The network station 130 can provide a power source for the portable device 100 to support the docked use of the portable device 100 and/or to recharge batteries of the portable device. Many variations to exploit the embodiment of the disclosed invention's integration of function are possible.

Still further, it should be appreciated that the personal digital assistant-type
25 computer integrated with a media player and a network station 130 could be embodied in other useful, shapes, designs, configurations and forms. For one, a network station 130 with display 132, network access, and one or more media players, ranging from a CD player to a television receiver coupled with the display 132 and speakers 134, helpfully integrates the function of those devices into a single package even if the individual devices

are not removable. This combination allows for accessing a network for visual or audio content, and high fidelity audio content can be appreciated through the audio subsystem 164 (Figure 1C) and speakers 134. This would be particularly useful if the media player operates on downloadable content from the network, or actually is an Internet radio for generating streaming content. Alternatively, if the media player uses CDs, DVDs, or downloadable media that can be loaded onto memory modules, the network station 130 can generate audio without actually being connected to a network.

Figure 1C shows a block diagram of the functional components of the portable device 100 and the network station 130. The portable device 100 incorporates what is termed as a computer subsystem 140 which incorporates the handheld computer functions described and provides control logic and storage for the media player 144. The computer subsystem 140 comprises a processor, memory, a power supply, and other devices which are typical in small computing systems. The computer system 140, and, thereby, the media player 144, is coupled to the display 104 and the function control buttons 108. The computer subsystem 140 reacts to the user's input through the function control buttons 108 and through the touch sensitive aspect of the display 104 or voice commands and controls content delivered to the display 104, controls the functions of the media player 144, and controls the routing of information between the portable device 100 and the network station through the network station interface 152. It should be noted that the media player 144 provides an output signal to an audio jack 148 and volume control on the portable device 100 to allow personal audio access, and that output is also supplied to the network station interface 152.

The network station interface 152 of the portable device 100 and the portable device interface 156 of the network station 130 couple to allow the integrated, cooperative functioning of the portable device 100 and the network station 130. The physical embodiment of the network station interface 152 and the portable device interface 156 preferably would comprise a multiple pin-in-socket arrangement, or springed tab to flat contact connectors, or a similar arrangement to allow for easy, snap-in or slide-in coupling of the portable device 100 to the network station 130. Multiple portable device interfaces

156 with similar couplings could be used to connect the other detachable devices 150, 154, and 158 (Figure 1B).

Through the portable device interface 156, the network station 130 relays video content to the display 158 and audio output to the audio subsystem 164, to which the speakers 134 are connected for audio output. The portable device interface 156 also couples the portable device to the network interface 160, which allows the computer subsystem 140 to access a network 172 such as the Internet or another network. If storage 168 for the computer subsystem 140 is included in the network station 130, the computer subsystem 140 would access the storage through the portable device interface as well. Power is supplied to the computer subsystem 140 in the portable device 100 via the portable device interface 156 as well as to devices in the network station by a power supply 176. A user can control the system through control buttons 162, or through a keyboard (not shown) that can be added to the system.

It should be noted that redundant control logic (not shown) could be added to the network station so that it could operate without the portable device 100 being attached. As long as the network interface 160 is available, the network station 130 could still be used to access content from the network 172, as well as whatever media devices may remain coupled with the network station 130 even when the portable device 100 is removed.

In another embodiment of the present invention, a handheld computer is combined with a digital camera in a single portable device 200 shown in Figures 2A and 2B. A media player (not shown) or cellular phone (not shown) and other devices also could be integrated. A screen display 204 supporting the visual output functions of the handheld computer and player device can double as a viewing screen for the digital camera. The portable device 200 also features function control buttons 208, or voice activation, and a lens 212 for the digital camera. It will be appreciated that digital images can be downloaded to and viewed on the all points addressable display of the display, particularly when the handheld computer has a color display. Accordingly, the display 204 can be used to show images captured by the digital camera through its lens 212.

Figure 2B shows a rear or side view of the portable device 200. The display 204 is hingably mounted on the body of the portable device so that it can be turned to various convenient viewing angles to support the use of the digital camera mode or while the user is in personal digital assistant mode. The display 204 can be directed perpendicular to the axis of the lens 212, or at an angle thereto for comfort or to avoid glare. Such a hingably mounted display 204 can be turned on, in this view, along its vertical axis, and twisted about its horizontal axis to allow for optimal flexibility of use. The lens 212, as is known in the art, also can be hingably or swivably mounted for optimum flexibility of use. The capture of the digital images can be actuated by the function control buttons 208, through touch sensitive activation through the display 204 by a dedicated "shutter" not shown, or voice activation. Other functions, such as camera mode, resolution, and other familiar operations can be controlled on the full-screen through the computer subsystem of the handheld computer portion of the device.

Comparable with the first embodiment described in Figures 1A, 1B, and 1C, the portable device 200 can operate in concert with a network station as shown in Figure 1C. A network station can be crafted to omit the speakers 134 (Figure 1C) or a media player could be added to the combination of the handheld computer, player, and digital camera in the portable device 200 which can drive speakers 134 (Figure 1C) of the network station. Absent a media player, however, considering Figure 1C, docking the portable device with the network station would allow for easy transmission of music, content, data, and digital images over the Internet or storage of such types of content to a storage device 168 (Figure 1C) in the network station. Similarly, the network station 130 could allow the portable device 200 to retrieve images from storage so that they could be shown on the display 204 of the portable device 200 when it is docked in the network station 130 (Figure 1C) or in a portable viewer mode. A power supply 176 in the network station could be used to power or recharge the portable device 200 as well.

Another embodiment of the present invention is a network station 330 similar to that described in Figures 1A, 1B, and 1C, which is responsive to telemetry, such as that made possible by RF polling and RFID tags which can be carried by users or

incorporated in any other type of portable or attachable device. Figure 3 shows a personal device 300 docked and integrated with a network station 330. Again, the network station 330 has a display screen 332, function control buttons 338, and a network station interface (not shown). The network station 330 also has one or more a portable device interfaces (not shown) for supporting a detachable digital camera 350, a radio or Internet radio 354, and a cassette player 358, speakers 334, and various forms of data storage (not shown). In addition, the network station 330 is equipped with a telemetry transceiver (not shown). In the embodiment shown in Figure 3, RF is used, and the network station 330 is equipped with an RF transceiver (not shown) joined with an RF antenna 340. The system shown also comprises at least one RFID tag 360, which, for example, might come with a key ring 364 so that a user can carry the RFID tag 360 with his keys 368, and not have to carry an additional item to take advantage of the functions afforded. Comparably, the RFID tag could be worn as a charm on a necklace or bracelet, carried in a wallet or purse, or carried by a user in another way.

The operation of the system in the embodiment shown in Figure 3 is the same as the system described in Figures 1A, 1B, and 1C, but with added function provided by the telemetry. In the embodiment shown, the RF transceiver sends a polling signal through its antenna 340. If an RFID tag 360 known to the system is within proximity, the RF transceiver receives a responsive signal. The system is able to respond to the presence of the RFID tag 360 to provide user preferences to the user, the content being preprogrammed to match the user's preferences. If, for example, the user likes to check a certain Internet site regularly, such as e-mail, the network station 330 could connect with the network, access that information, and display the information on the display screen 332 or audibly read the information without any direct user interactions. If there is a certain type of music the user likes which the network station has stored in its storage devices or can access over the Internet, that too can be provided to the user. Therefore, merely by the RFID tag 360 entering the proximity of the network station 330 or remote interface to the network station, the user can be provided with desired information or media automatically.

Certainly, the system can be programmed to respond to different RFID tags 360 with different content geared to the tastes of the person carrying each RFID tag 360.

In the embodiment of the invention shown in Figure 3, specific control logic to poll for and identify RFID tags 360 and identify the RFID tag 360 holder to the system could be implemented in the network station. In the latter case, the system could provide automatic recognition and response steps when the portable device 300 is not docked with the network station 330, although network operations would not be possible.

Another embodiment of the invention is shown in Figures 4A and 4B. Instead of the portable device comprising the media player and the handheld computer as in the embodiment shown in Figures 1A, 1B, and 1C, in this embodiment the removable device 400 is basically the display of the system. The removable device operates as a handheld, touch-sensitive, keyboard-operated, mouse-operated, or voice controlled computer when undocked from the network station 430 as shown in Figure 4B. The integrated system of the removable device 400 and the network station 430 shown in Figure 4A supports all the functionality as the system shown in Figure 1B. As shown in Figure 4B, the removable device 400, which features a network station interface (not shown) functions separately as a handheld computer, which can access network content when docked with the network station 430. In this embodiment, because the removable device 400 is just a display, all localized control is implemented by touch sensitive icons on the display itself and function control buttons 450. Coupling the removable device with the network station 430 allows for the handheld device to serve as a clock, media display, etc., while docked with the network station 430.

Figure 5 shows an additional embodiment of the present invention. The portable device 500 is a combined media player, digital camera, and handheld computer, comparable to that of the portable device shown in Figure 1A. This portable device 500 offers the same functions and controls, having a display 504 capable of showing media player information 512 and handheld computer information 516, function control buttons 508, and scroll buttons 520. A camera lens 530, disposed on the opposite face of the device from the display 504 for ease of composition on the display 504. A difference in this

embodiment is that, built into the portable device is a network interface port 550 which allows the portable device 500 to couple with a network (not shown). Accordingly, by moving this function into the portable device 500, a network station is not needed. With only a cord or cable from a cordless link added to the portable device 500, the portable device can access network content which can be viewed on the display or heard through an added listening device (not shown). A modem (not shown) could be incorporated into the portable device to allow a user to access network content wherever she has a wired connection or an operable wireless connection to a network.

Figures 6A and 6B show a further embodiment of the present invention.

10 Figure 6A shows the back of a portable device 600 which is comparable to those shown in Figures 1A, 2A and 2B, and 5. On the back of the device, where presumably there is neither a display or function keys with which it would interfere, an indentation 650 is included in the casing of the portable device 600. As shown in Figure 6B, this indentation allows a user 680 to insert the pointer finger 670 of his or her hand to get a better grip on the portable device 600. Currently used devices have belt clips and straps which project outward from the device, take up space, and are inconvenient and cumbersome to use; to the contrary, the embodiment shown in Figure 6B requires no such strap or clip, and affords the user an angled grip across the casing of the portable device 600, while at the same time allowing the user to make button selections with the users' thumb of the same hand.

20 Figures 7A and 7B show a further embodiment of the present invention.

Figure 7A shows the back of a portable device 700 which is comparable to those shown in Figures 1A, 2A and 2B, and 5. On the back of the device, where presumably there is neither a display or function keys with which it would interfere, a flexible finger extension 750 is attached by its broad case to the casing of the portable device 700. This extension 750 allows a user 780 to insert one or more fingers 770 of his or her hand to get a better grip on the portable device 700. As shown in Figure 7B, the extension 770 is mounted perpendicular to the casing. However, as shown in Figure 7C, it deforms to snugly enshroud the user's finger to better secure the portable device 700, while at the same time allowing the user to make button selections with the users' thumb of the same hand.

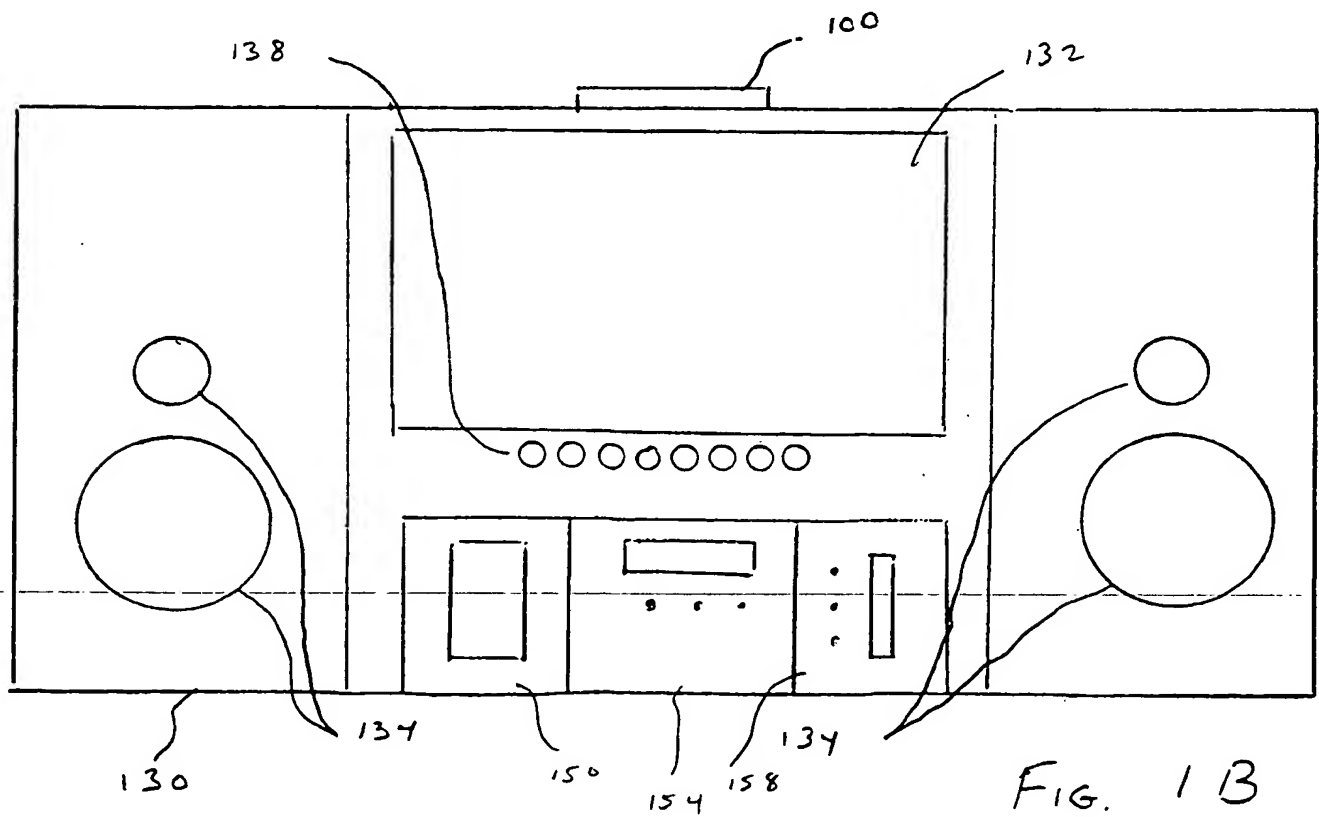
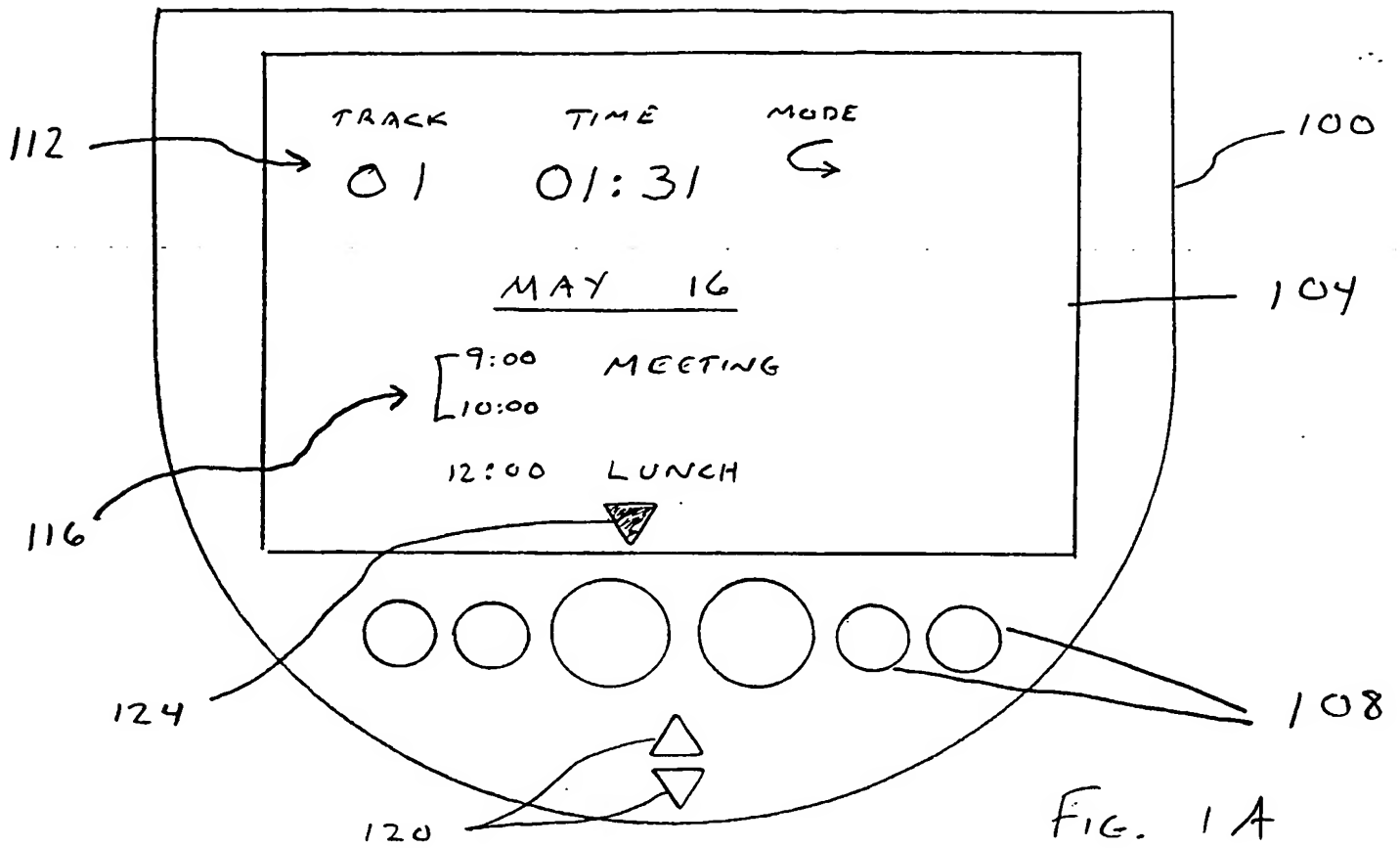
From the foregoing it will be appreciated by one ordinarily skilled in the art that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the
5 appended claims.

CLAIMS

1. A network communications entertainment device, the device comprising:
 - a removable network communications control device comprising
 - a handheld computing device, the handheld computing device comprising:
 - a processor;
 - a memory system coupled with the processor;
 - a user control interface coupled with the processor, the user control interface allowing the user to direct operations of the handheld computing device;
 - a display screen coupled with the processor, the display screen being operable to display at least one of text, numeric, or graphics content, and providing information to a user concerning operations of the handheld computing device; and
 - a device interface allowing the handheld computing device to exchange information with another device;
 - a media player coupled with and controllable by the handheld computing device, the media player comprising:
 - an audio generation system for translating the audio information loaded into the media player by at least one of transferred electronic files or interchangeable audio storage devices into sound signals; and
 - an audio output mechanism receiving the sound signals generated by the audio generation system and allowing the user to hear content of the sound signals through a transducer; and
 - a network station operable to couple with the removable network communications control device interface, comprising:
 - a removable network communications control device operable to couple with the interface allowing the removable network communications control device to exchange data with the network communications and entertainment hub system;

a network interface coupled with the removable network communications control device interface allowing the removable network communications control device to interface directly with a network to receive data without the use of an intermediary computing system; and

an audio transducer coupled with the removable network communications control device interface allowing the user to hear the content of the sound signals.



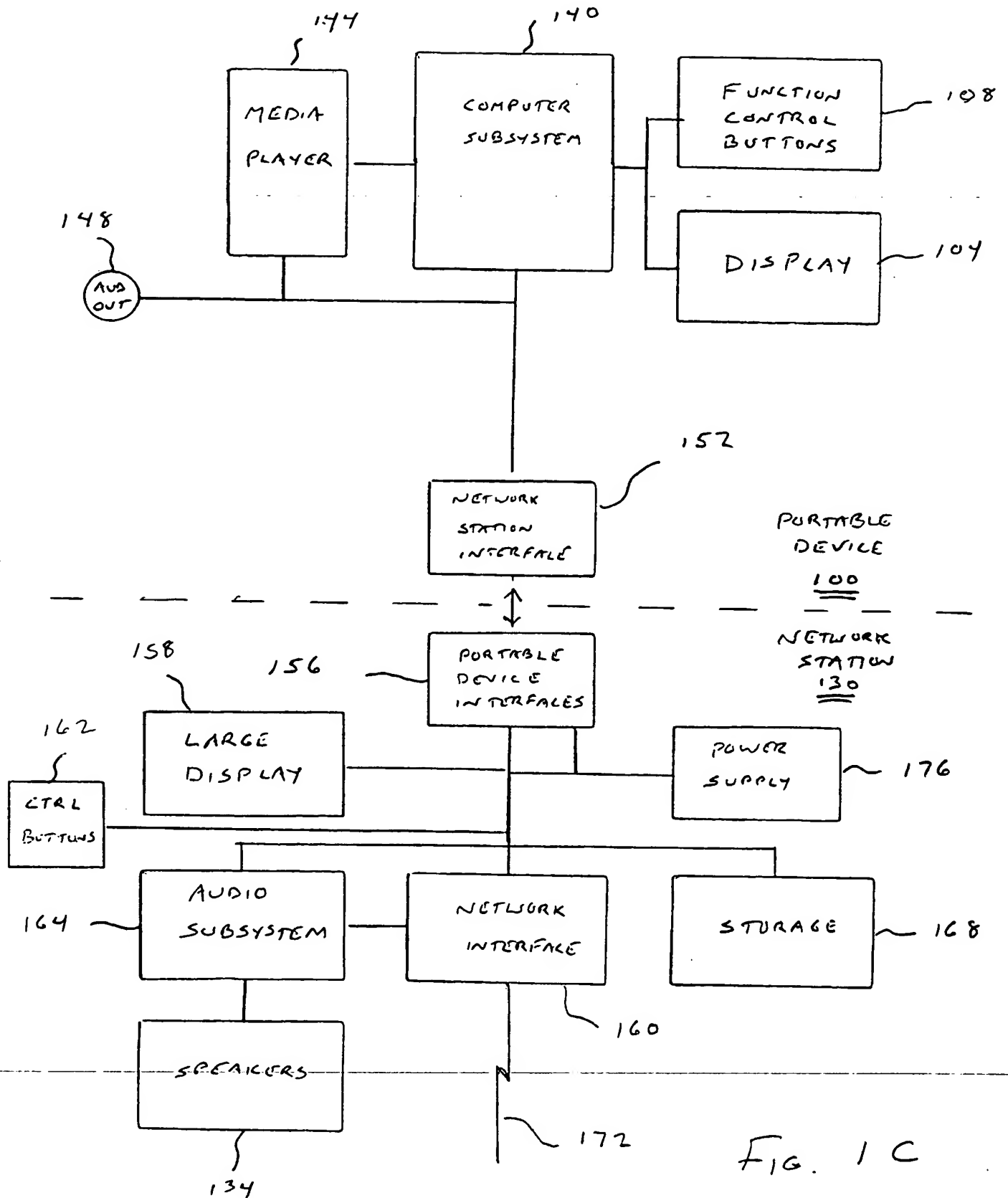


FIG. 1C

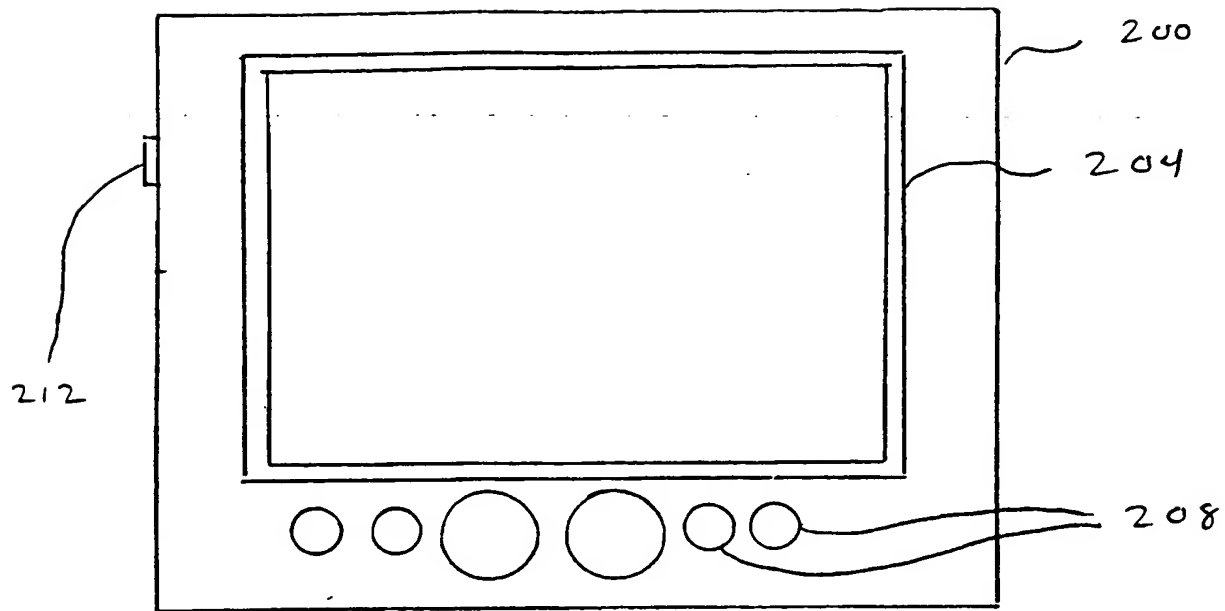


FIG. 2A

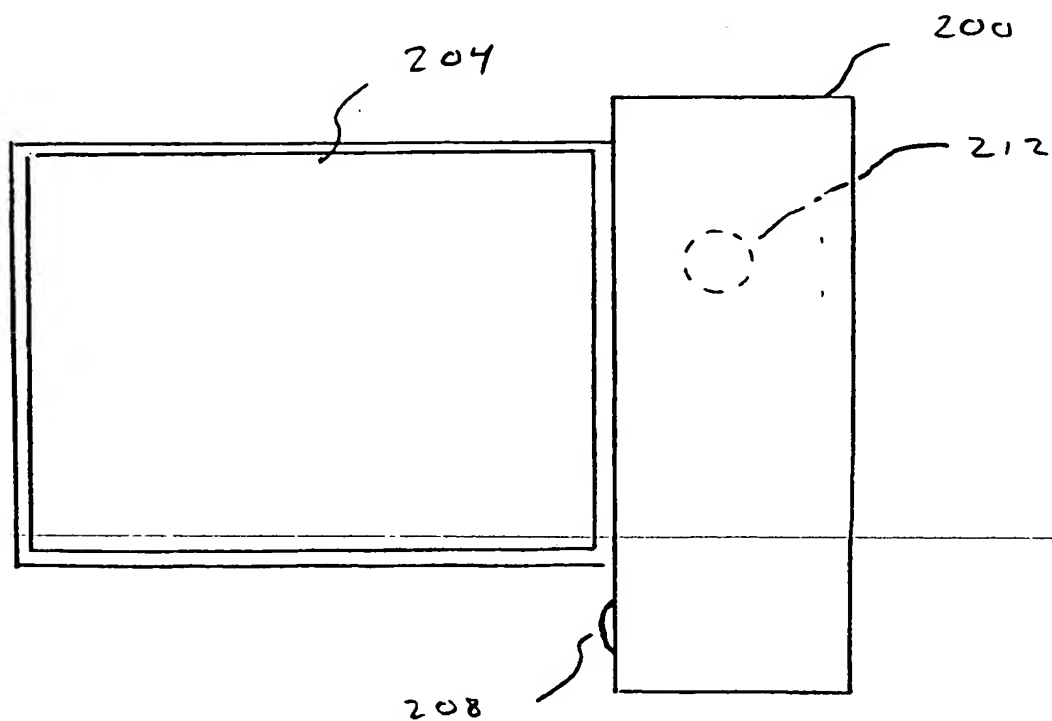


FIGURE 2B

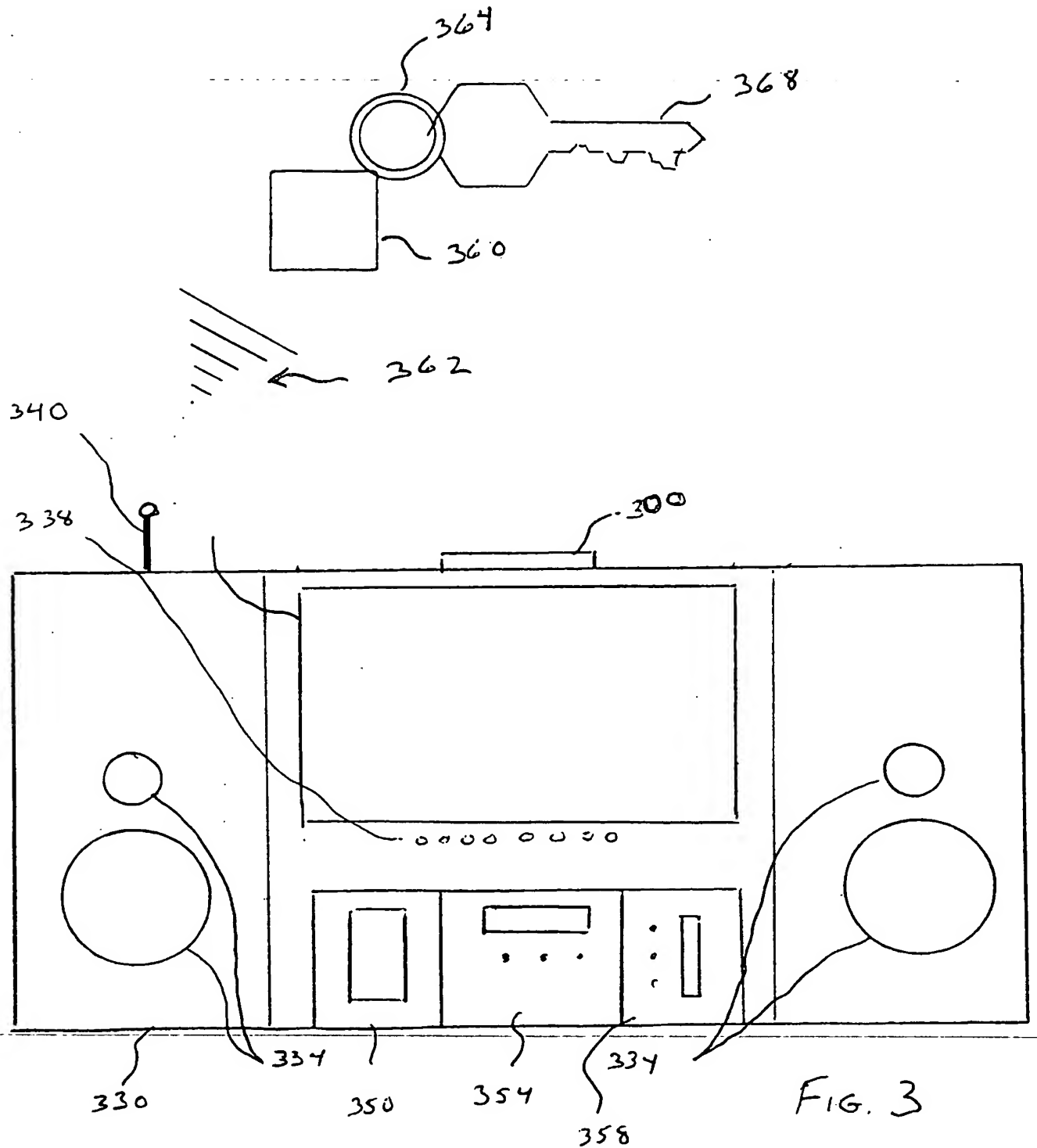
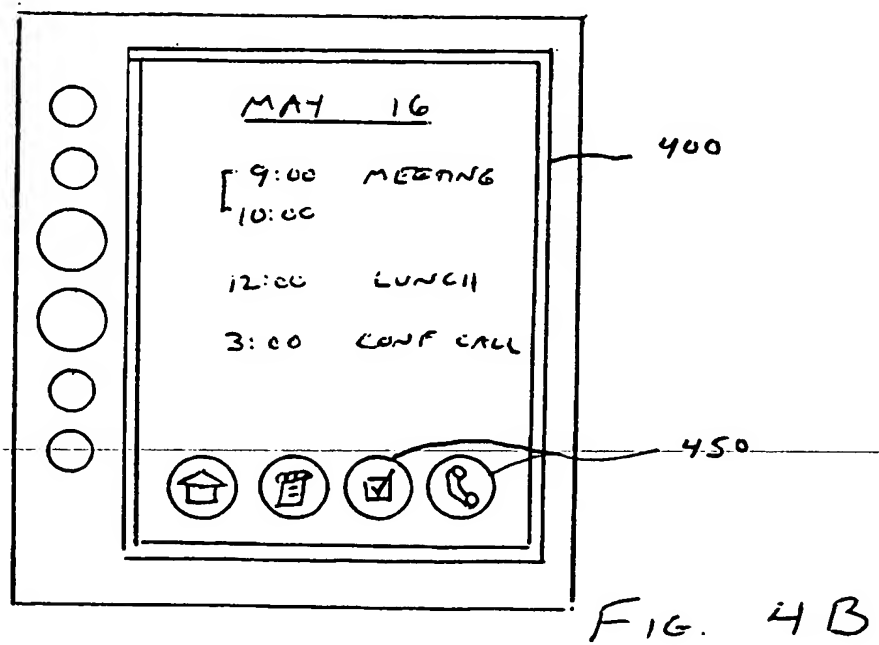
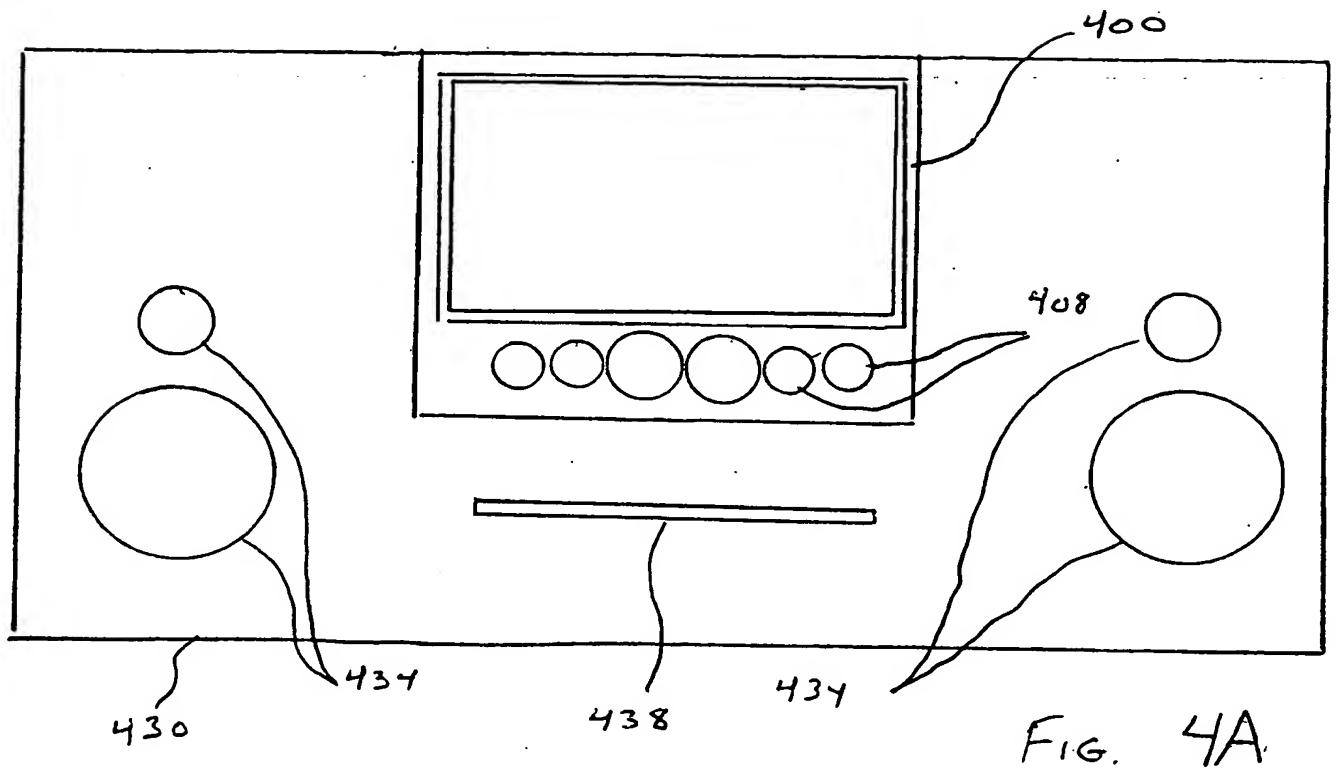
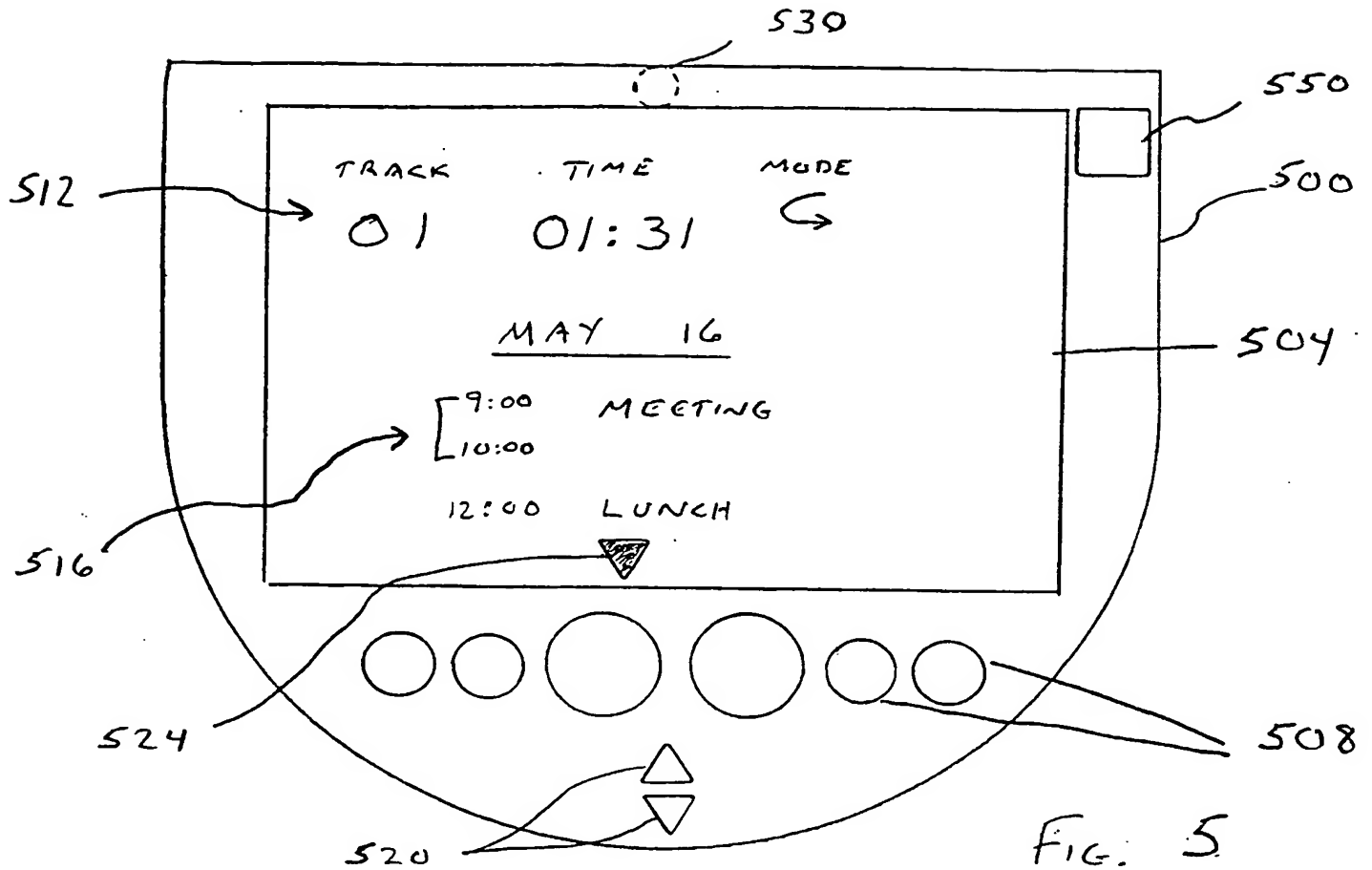
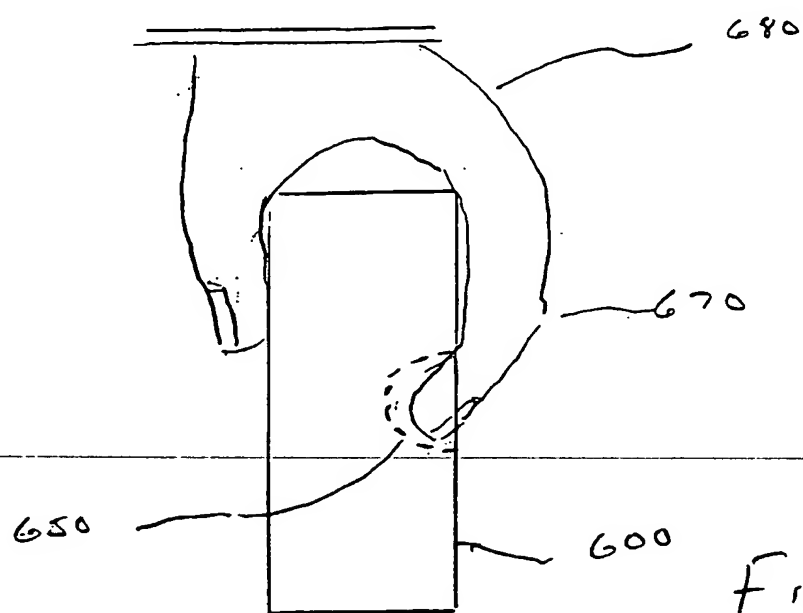
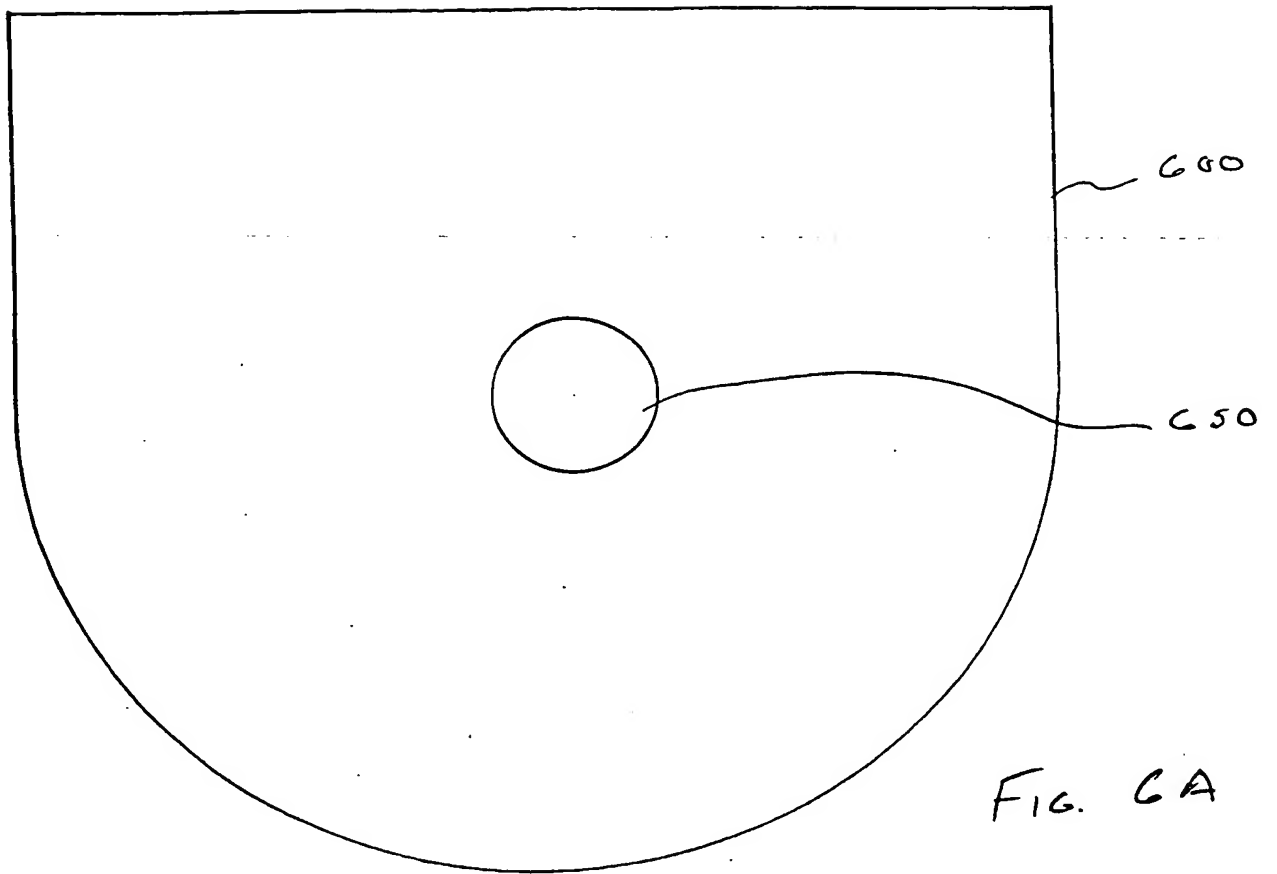


FIG. 3







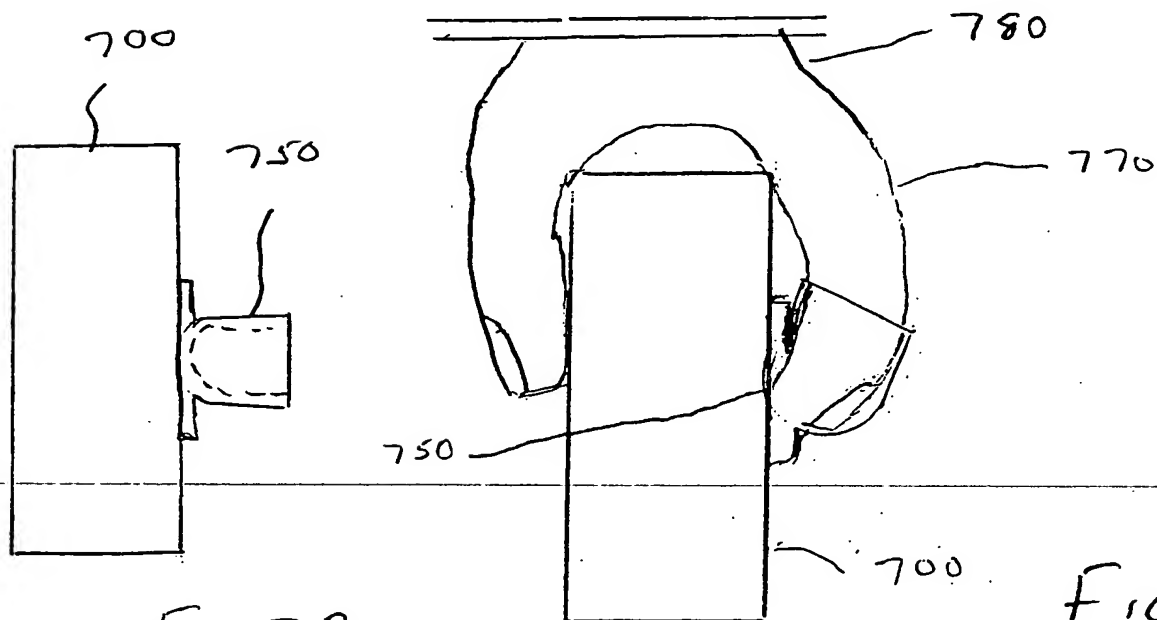
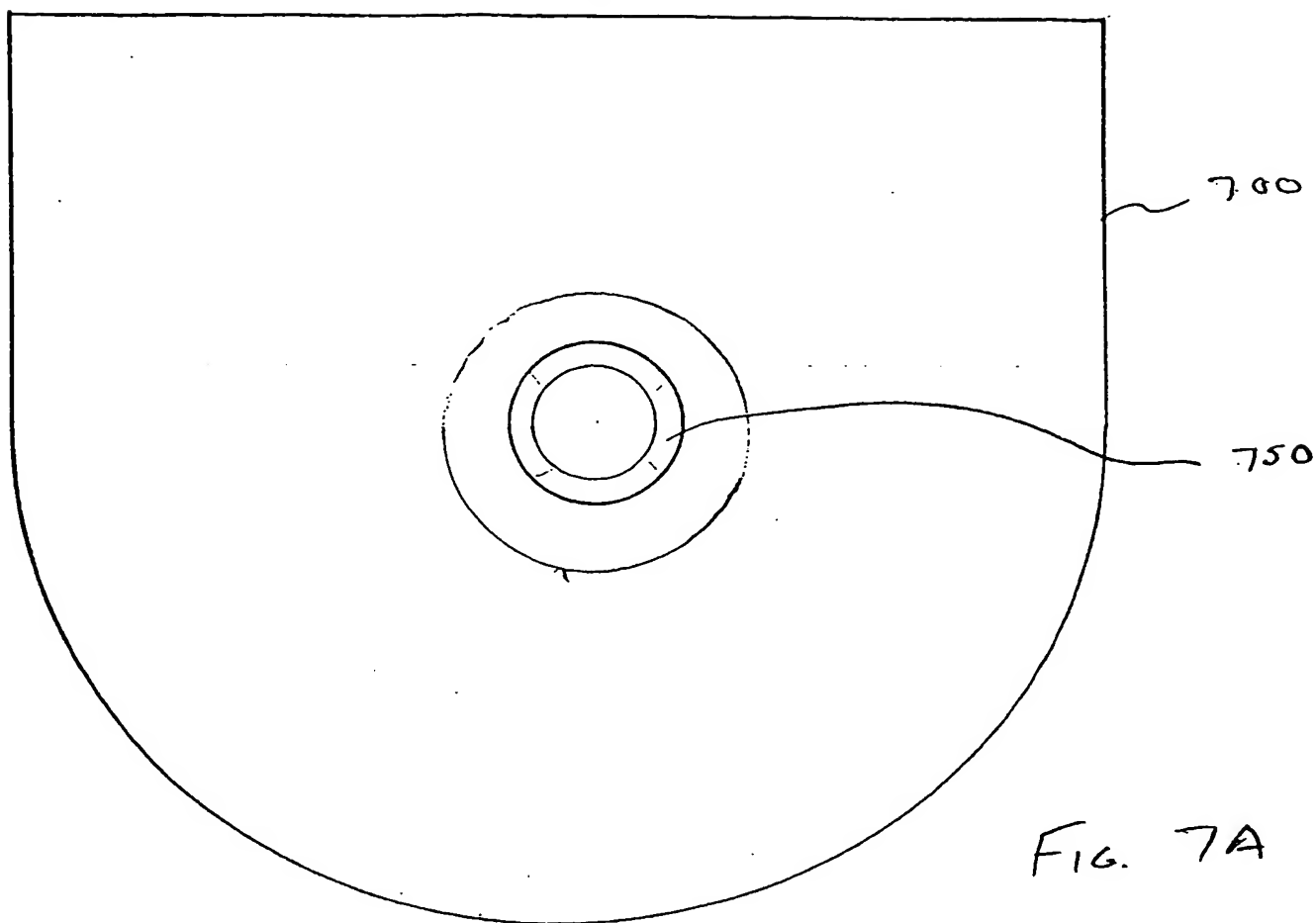


FIG. 7B

FIG. 7C

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

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Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,042,478 A (NG) 28 March 2000 (28.03.2000), see entire document.	1
X,P	US 6,267,678 B1 (KUBO et al) 31 July 2001 (31.07.2001), see entire document.	1
Y	US 5,428,528 A (TAKENOUCI et al) 27 June 1995 (27.06.1995), see entire document.	1
Y	US 5,095,798 A (OKADA et al.) 17 March 1992 (17.03.1992), see entire document.	1
Y	US 5,161,803 A (OHARA) 10 November 1992 (10.11.1992), see entire document.	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"&" document member of the same patent family

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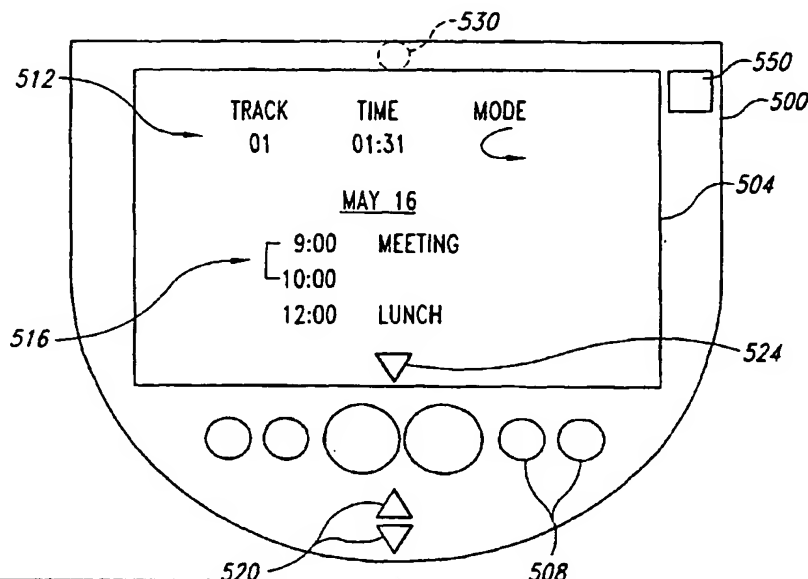
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(54) Title: NETWORK COMMUNICATIONS ENTERTAINMENT SYSTEM AND METHOD



(57) Abstract: A network communications entertainment system and method integrates functionality of popular handheld electronic devices, such as handheld computers, digital cameras, game players, and CD players, while sharing potential costly resources, such as a full size, flat panel display (Fig. 5). A handheld device can be joined with a network station to provide a more expansive media amplification device and to provide access to a network. Various forms of the systems also comprise a digital camera coupled with a handheld computer, use RF identification to automatically respond with content desired by a known user, allow removability of only the handheld computer portion of the invention, allow direct connection between the portable device and a network, and feature an indentation in the casing to make the portable device easier for a user to grip.

WO 03/008060 A1



(15) Information about Correction:
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

NETWORK COMMUNICATIONS ENTERTAINMENT SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority from United States Provisional Application
5 No. 60/305,606, filed July 17, 2001.

TECHNICAL FIELD

The present invention relates to personal electronic computing and
entertainment devices. More particularly, the present invention relates to a system and
10 method for integrating computing, communications, networking, and/or other media
devices.

BACKGROUND OF THE INVENTION

The costs of manufacturing portable electronics devices have decreased
15 products so much that it is possible for more people to own more of these desirable devices.
Although laptop computers remain relatively high cost items, devices such as handheld
computers, compact disc (CD) players, cassette players, downloadable media players, DVD
players, digital cameras, game players, and similar devices have become inexpensive
enough for most people to own some or all of these.

20 Moreover, like portable personal computers, these personal electronics
devices are not only less expensive, but their functionality has reached a point where they
can replace many conventional non-portable devices. This makes it possible for an owner
of such a device to own only a portable version of such a device rather than own a portable
device and non-portable device. For example, a portable CD player can generate audio
25 source signals having comparable fidelity to that of much heavier and larger component
stereo CD player. If a portable CD player can be connected to a stereo system or a set of
speakers, the owner of the portable CD player could replace and displace the component
stereo CD player altogether. This might be even more ideal in the case of downloadable
media players, commonly termed "MP3 Players" because most use files of MP3

compression. Although a CD can be removed from a portable CD player and be placed into a component stereo system, some MP3 players do not use removable media storage. Thus, to listen to an MP3 player in a home or business environment, the MP3 player would have to be connected to an external device to access its content.

5 On the other hand, some of these portable devices need to be coupled with a larger device to fully realize their functionality. Digital cameras, to give one example, typically must be connected by cables to a personal computer, or must use removable media which must be transferred to a personal computer in order to view the captured images on other than on the small screen on the camera. A personal computer is needed to view the
10 images on a large screen, route them to a printer, or transmit them over a network. Similarly, most downloadable media players must be connected with a personal computer to download content to the player. In addition, many handheld computers must be synchronized with a personal computer to backup their content, to install software, or to provide Internet access to access data needed for handheld applications. Thus, owning the
15 handheld computer does not eliminate the need for a larger computing device. Furthermore, to synchronize the handheld computer with a personal computer, additional hardware is needed, such as a synchronization cradle and an interface cable to connect to the personal computer. Thus, the proliferation of personal consumer electronics devices largely means that a user must keep track of and make space for more devices, rather than
20 fewer devices.

 In those cases where a portable electronics device might replace a larger device, the process of connecting the portable device to make it suitable for home or office use might be so cumbersome that it is more desirable to have equivalent portable and non-portable devices. For example, taking the example of connecting a portable CD player to a
25 home stereo may require cables and some skills which some users do not have, or at least a willingness to go through the tedium of connecting the player to the stereo with cables.

 Overall, having all these devices costs a lot of money, and results in users of these devices owning comparable, equivalent portable and non-portable devices. To interconnect them requires skill or at least some patience. Further, all these devices take up

space. Moreover, because they are independent devices not designed to work together, certain features or functions may be duplicated between them, or prohibits such interaction from occurring.

What is needed is a way to take portable electronics devices, combine
5 features and functions when possible to save users time, space, and money. Specifically, if
there were a way to combine the features and functions of multiple devices, it would save
users and would-be users time and would alleviate the burden of carrying two or more
portable devices, even if combined or attached as one device, when one could suffice. It
would save the users the space required to have multiple differentiating devices that only
10 provide a limited scope of features or uses, as well as duplicating portable device functions.

It is to this object that the present invention is directed.

SUMMARY OF THE INVENTION

The present invention combines commonly used personal electronics
15 devices to eliminate redundancy between those devices, to reduce cost and size, and/or to
ease interconnectivity by eliminating the need for intermediate connection devices.
Different embodiments of the present invention combine different devices and, therefore,
different features.

One variation of the present invention combines a media player, such as a
20 downloadable media player, a CD player, cassette player, or a DVD player, as well as a
handheld computer, and possibly other devices such as a digital camera in a single unit, the
resulting portable device coupling directly to a network station without any cradle or port
wires allows the portable device or a plurality of portable devices to transduce media
signals through speakers based in that network station. The network station also provides a
25 conduit for the portable device to access a network, such as the Internet to receive and send
network data. A large display screen on the network station allows content from the
network or from the portable device or devices to be comfortably viewed by a user.

A variation of the present invention combines a handheld computer and a
digital camera. A screen display which supports the visual output functions of the handheld

computer can double as a viewing screen for the digital camera, as memory and/or storage of the handheld computer can be used to support the memory and storage needs of the digital camera system. This variation of the present invention can work with a network station for the portable device to access a network, such as the Internet to receive and send
5 network data. A display screen on the portable device, through which digital photographs and handheld computer functions are accessed and monitored, when coupled to the network station allows visual content received from the network to be viewed by a user. Other functional units also could be added to this device, such as a music player, a cellular telephone, a game player, or a pager.

10 Another variation of the present invention combines a handheld computer and a digital camera. A screen display which controls the handheld computer can double as a viewing screen for the digital camera, as memory and/or storage of the handheld computer can be used to support the memory and storage needs of the digital camera system. This variation of the present invention can work with a network station to allow
15 the portable device to transduce media signals through speakers based in that network station, as well as to provide a conduit for the portable device to access a network, such as the Internet to receive and send network data. A display screen on the portable device, through which media player and handheld computer functions are accessed and monitored, when coupled to the network station allows visual content received from the network to be
20 viewed by a user. Other functional units also could be added to this device, such as a CD player, game player, music player, or pager. By contrast, if the user is by or near the network station, the user could use the display of the network station as his/her medium for interaction.

Another variation of the present invention is a network station having a
25 display, at least one transducer to allow a user to see and/or hear media content from an internal media player, and a radio frequency identification (RFID) sensing device which reacts to RFID tags carried by users of the network station. The network station also provides a conduit to access a network, such as the Internet to receive and send network data which can be stored or accessed by the user through the display and the transducer.

The RFID sensing device, upon detecting and authenticating an authorized RFID tag in the vicinity, can direct the network station to generate media content or access network content according to information profiles about the user referenced to as "user preferences," associated with the RFID tag stored by the network station, as well as the portable device.

5 The network station, depending on preferences associated with the RFID tag holder, could launch a browser and retrieve the RFID tag holder's e-mail to that device.

Another variation of the present invention is a network station having a removable display and at least one transducer to allow a user to see and/or hear media content from an internal media player. The network station also provides a conduit to
10 access a network, such as the Internet to receive and send network data which can be stored or accessed by the user through the display and the transducer. The removable display screen is equipped with storage and logic devices so that it can be removed from the network station and used as a handheld computer or similar hardware device.

Another variation of the present invention is a portable device combining a
15 media player, such as a downloadable media player, a CD player, a game player, a phone, or a DVD player, and a handheld computer in a single unit, along with a network interface that allows the portable device to access a network, such as the Internet or phone network, to receive and send network data. A display screen on the portable device, through which media player and handheld computer functions are accessed and monitored.

20 Another variation of the present invention is a portable electronics device having an indentation on a surface, or extension to the surface, on a side away from controls or display devices to receive at least one finger or thumb of the user to enable the user to more easily and securely hold onto the device.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A is a front view of one embodiment in which a portable device features a media player and a handheld computer.

Figure 1B is a front view of the embodiment shown in Figure 1A with the portable device docked with a network station.

Figure 1C is a block diagram of the components of the embodiment shown in Figure 1B in which the portable device is removably coupled with the network station.

Figure 2A is a front view of one embodiment of the present invention in which a portable device features a handheld computer and digital camera functions.

5 Figure 2B is a side view of one embodiment of the present invention in which a portable device features a handheld computer and digital camera functions.

Figure 3 is a front view of one embodiment having at least one portable device docked with a network station, and radio frequency identification (RFID) sensing and tag devices to control generation of content based on user preferences, and desired
10 interactions associated with the RFID tag holder.

Figure 4A is a front view of one embodiment in which a network station features a removable display capable of acting as a handheld computer.

Figure 4B is a front view of the removable display of the embodiment shown in Figure 4A.

15 Figure 5 is a front view of one embodiment in which a portable device features a media player, a handheld computer, a digital camera, and a network interface.

Figure 6A is an underside view of one embodiment in which a portable device features an indentation to enable a user to better hold the device.

Figure 6B is a side view of the embodiment shown in Figure 6A in which a
20 portable device features an indentation to enable a user to better hold onto the device.

Figure 7A is an underside view of one embodiment in which a portable device features an extension from the surface to enable a user to better hold the device.

Figure 7B is a side view of the embodiment shown in Figure 7A in which a portable device features a finger extension to enable a user to better hold onto the device.

25 Figure 7C is a side view of the embodiment shown in Figure 7A with a user's finger engaging the extension to better hold onto the device

DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present invention are directed toward integrating the functions of personal electronics devices to provide cost-effective, compact, multi-function portable devices, which can be, but do not necessarily need to be, coupled with a base station to provide enhanced functions. Embodiments of the present invention are also directed toward cost-effective, compact, multi-function devices for a home or office. One skilled in the art will understand, however, that the present invention may be practiced without several of the details described in the following description. Moreover, in the description that follows, it is understood that the figures related to the various embodiments are not to be interpreted as conveying any specific or relative physical dimensions, and that specific or relative physical dimensions, if stated, are not to be considered limiting unless the claims expressly state otherwise. Further, illustrations of the various embodiments when presented by way of illustrative examples are intended only to further illustrate certain details of the various embodiments, and shall not be interpreted as limiting the scope of the invention.

A first embodiment of the present invention combines a media player, such as a downloadable media player, a CD player, or a DVD player, and a handheld computer in a single portable unit. Figure 1A shows one embodiment of the portable device 100 which features a combination CD player and handheld computer. The portable device 100 could be designed with the familiar hinged clamshell shape commonly used in portable CD players which receives a media disc, such as a CD, onto a spindle on which the media disc can be rotated and read (not shown) or rotated to insert or take out the media as a CD. As shown in Figure 1A, the portable device 100 prominently features a display 104 and a plurality of function control buttons 108. The portable device 100 also features an output jack (not shown) to connect headphones or a similar device as media players typically do, and a network station interface (not shown) whose function will be explained below.

As will be appreciated, both known CD players and handheld computers have display screens to allow users to monitor or control the operation of such devices. In CD players, these displays typically are alphanumeric-only displays which convey

information about the disc being played, such as the track number, elapsed time per track, total playing time per disc, etc. A CD player display also may include icons to indicate whether the CD player is playing a CD, paused, stopped, low on power, programmed to repeat tracks, and other familiar signals. By contrast, a handheld computer typically has an all points addressable display which is software addressable to display text, images, icons, and other symbols familiar to users of personal or handheld computers. Typical handheld computer displays also are touch-sensitive to allow actuation of application specific functions, to mark text, and other functions which one might activate by dragging and clicking a mouse with a portable or desktop computer or using a keyboard.

One aspect of this embodiment of the present invention is providing an integrated display 104. A display capable of supporting functions of a handheld computer can provide the simpler functions of a typical CD player's display, or that of a digital camera or a cellular telephone, for example. As shown in Figure 1A, the display can show information about the CD playing at 112, including track information, time information, and playing mode, for example, while at the same time showing information from a handheld computer application, such as schedule information at 116 or more simultaneous display function capabilities. The CD information 112 could include graphic icons of the artist, song, album cover, band logo, or other information rather than numeric information only, and can provide to the user visual content, such as a video or animation as past of or in addition to particular song or album. The CD information 112 could be hidden or moved to allow more space for handheld computer information 116 to be shown through software controls activated by function control buttons 108 or by touching active portions of the touch sensitive display 104 with a stylus or other suitable pointing device. Although a conventional stylus is not required, for the sake of simplicity, the term stylus shall be used to refer to whatever device, such as a pen cap, a finger nail, a paper clip, etc., is used to activate the touch sensitive functions of the display.

Alternatively, the CD information 112 and schedule information 116 could both continue to be supported simultaneously, and scroll keys 120, long familiar to handheld computer users, could be used to reveal more content from a desired application

such as the schedule application. Similarly, touch sensitive active areas on the display 104, such as the downward scroll icon 124 indicated could be actuated with a stylus to reveal more content, or even voice-activated scrolling and selections by the user.

The function control buttons 108, also familiar to handheld computer users, can be programmed as application specific. The function control buttons 108 could be used to control the functions of the CD player, and could trigger functions such as play, skip forward, pause, etc. When the CD player is not running or runs as a background application to a handheld computer function, these same function control buttons 108 might, in the context of the example of the scheduling application, trigger entry of a new appointment, to turn off an alarm, or another function. Alternatively, as is familiar to many handheld computer users, these buttons might initiate other applications, such as to-do list managers, address/phone book directories, etc., while active application functions are activated solely through touch-screen initiated commands. By contrast, all such selections can be facilitated by voice commands to control all or functions of the device.

Figure 1B shows the portable device 100 docked with a network station 130 that has the ability to interact with the portable device 100, adding and enhancing the functions of the portable device. Most notably, in the embodiment shown, the network station 130 features a large display 132, one or more portable device interfaces (not shown), a network interface (not shown), speakers 134, and function control buttons 138. The portable device 100 interfaces communicably couples with network station interfaces (not shown) so that the devices 100 and 130 can function cooperatively. For example, through the portable device interface, the portable device 100 can connect with the network stations' data storage, and/or a network such as the Internet through the network interface (not shown) of the base station 130.

The network station 130 also provides docking stations for other portable devices, such as a digital camera 150, a radio or Internet radio 154, and a cassette player 158. Additional media or portable devices interfaces (not shown) can be made available for these devices. For example, the digital camera 150, when coupled to the network station 130 through a portable device interface could be configured for automatic or manual

downloading of photographs to storage devices in the network station 130. These photographs could then be viewed on the large display 132 of the network station. Similarly, an Internet radio 154 coupled with a portable device interface in the network station could add Internet radio function to the network station 130, as well as in a
5 standalone, detached mode. It is also possible, along the lines of the portable device 100, that a device such as a cassette player 158 could be coupled with a handheld computer, and take advantage of the capabilities of the network station 130 in the same way as the handheld computer portion of the portable device 100.

It should be appreciated that, with such function available in a network
10 station 130, a user or group of users may have one network station 130 and a plurality of personal devices 100. For example, each member of a family could have his or her own portable device 100, but share the network interface, storage, and other resources of the network station 130.

With portable devices coupled to the network station 130, a user can control
15 the system's resources by using the function control buttons 138 on the network station 130. The user can also control system functions through touch-sensitive capabilities of the display 132. A keyboard (not shown) also could be added. The user could check e-mail, initiate media downloads, browse the World Wide Web, or similar functions on the display 132 which, when docked with the network station, serves as the display for the entire
20 system, or could utilize the larger display comprised of the network station 130 to facilitate its interaction. It will be appreciated, therefore, that this display 104 not only serves multiple purposes for the portable device 100 in allowing the user to monitor both CD player and handheld computer functions, but can also serve as display when the portable device 100 and network device are fully integrated.

25 Figure 1B also shows the network station being equipped with speakers 134. The speakers 134, which can be driven by an amplification system (not shown) for greater volume than would be desired in a traditional, personal mode provided by the portable device. Accordingly, sound content from a CD, from the Internet, or other media can be experienced room-wide. These speakers 134 in the network station 130 therefore allow the

combination of the portable device 100 and the network station 130 to serve as a table-top stereo system, allowing a user to have both a portable stereo and a home or office stereo in this one cooperative device.

Many variations of this integration are possible. Considering the media
5 player in the portable device, instead of a CD player, the portable device 100 could include
a DVD player, a downloadable media device, a wireless or wired phone, or other portable
devices. The video content provided by the DVD player could be shown on the display 104
of the portable device 100 when it is used as such, or as part of the integrated device with
the network station 130, on the full size display 132, using the speakers 134 to provide
10 sound output to potentially multiple viewers. The media player in the portable device also
could play compressed MP3 or other music format disks, or the media player could be a
downloadable media player with interchangeable memory devices. Similarly, the portable
device 100 could include a cellular or wired telephone activated through the function
control buttons 108 or touch-sensitive icons on the portable device display 104, or by voice
15 activation, commands, and selections.

Also, the network station 130 can provide other functions. The network
station 130 can include storage for handheld computer applications or Internet applications,
and all other portable devices. If the portable device 100 includes a cellular telephone, the
speakers 134 of the network station 130 could allow the cellular phone to be used as a
20 speaker phone. The network station 130 can provide a power source for the portable device
100 to support the docked use of the portable device 100 and/or to recharge batteries of the
portable device. Many variations to exploit the embodiment of the disclosed invention's
integration of function are possible.

Still further, it should be appreciated that the personal digital assistant-type
25 computer integrated with a media player and a network station 130 could be embodied in
other useful, shapes, designs, configurations and forms. For one, a network station 130
with display 132, network access, and one or more media players, ranging from a CD
player to a television receiver coupled with the display 132 and speakers 134, helpfully
integrates the function of those devices into a single package even if the individual devices

are not removable. This combination allows for accessing a network for visual or audio content, and high fidelity audio content can be appreciated through the audio subsystem 164 (Figure 1C) and speakers 134. This would be particularly useful if the media player operates on downloadable content from the network, or actually is an Internet radio for generating streaming content. Alternatively, if the media player uses CDs, DVDs, or downloadable media that can be loaded onto memory modules, the network station 130 can generate audio without actually being connected to a network.

Figure 1C shows a block diagram of the functional components of the portable device 100 and the network station 130. The portable device 100 incorporates what is termed as a computer subsystem 140 which incorporates the handheld computer functions described and provides control logic and storage for the media player 144. The computer subsystem 140 comprises a processor, memory, a power supply, and other devices which are typical in small computing systems. The computer system 140, and, thereby, the media player 144, is coupled to the display 104 and the function control buttons 108. The computer subsystem 140 reacts to the user's input through the function control buttons 108 and through the touch sensitive aspect of the display 104 or voice commands and controls content delivered to the display 104, controls the functions of the media player 144, and controls the routing of information between the portable device 100 and the network station through the network station interface 152. It should be noted that the media player 144 provides an output signal to an audio jack 148 and volume control on the portable device 100 to allow personal audio access, and that output is also supplied to the network station interface 152.

The network station interface 152 of the portable device 100 and the portable device interface 156 of the network station 130 couple to allow the integrated, cooperative functioning of the portable device 100 and the network station 130. The physical embodiment of the network station interface 152 and the portable device interface 156 preferably would comprise a multiple pin-in-socket arrangement, or springed tab to flat contact connectors, or a similar arrangement to allow for easy, snap-in or slide-in coupling of the portable device 100 to the network station 130. Multiple portable device interfaces

156 with similar couplings could be used to connect the other detachable devices 150, 154, and 158 (Figure 1B).

Through the portable device interface 156, the network station 130 relays video content to the display 158 and audio output to the audio subsystem 164, to which the speakers 134 are connected for audio output. The portable device interface 156 also couples the portable device to the network interface 160, which allows the computer subsystem 140 to access a network 172 such as the Internet or another network. If storage 168 for the computer subsystem 140 is included in the network station 130, the computer subsystem 140 would access the storage through the portable device interface as well. Power is supplied to the computer subsystem 140 in the portable device 100 via the portable device interface 156 as well as to devices in the network station by a power supply 176. A user can control the system through control buttons 162, or through a keyboard (not shown) that can be added to the system.

It should be noted that redundant control logic (not shown) could be added to the network station so that it could operate without the portable device 100 being attached. As long as the network interface 160 is available, the network station 130 could still be used to access content from the network 172, as well as whatever media devices may remain coupled with the network station 130 even when the portable device 100 is removed.

In another embodiment of the present invention, a handheld computer is combined with a digital camera in a single portable device 200 shown in Figures 2A and 2B. A media player (not shown) or cellular phone (not shown) and other devices also could be integrated. A screen display 204 supporting the visual output functions of the handheld computer and player device can double as a viewing screen for the digital camera. The portable device 200 also features function control buttons 208, or voice activation, and a lens 212 for the digital camera. It will be appreciated that digital images can be downloaded to and viewed on the all points addressable display of the display, particularly when the handheld computer has a color display. Accordingly, the display 204 can be used to show images captured by the digital camera through its lens 212.

Figure 2B shows a rear or side view of the portable device 200. The display 204 is hingably mounted on the body of the portable device so that it can be turned to various convenient viewing angles to support the use of the digital camera mode or while the user is in personal digital assistant mode. The display 204 can be directed
5 perpendicular to the axis of the lens 212, or at an angle thereto for comfort or to avoid glare. Such a hingably mounted display 204 can be turned on, in this view, along its vertical axis, and twisted about its horizontal axis to allow for optimal flexibility of use. The lens 212, as is known in the art, also can be hingably or swivably mounted for optimum flexibility of use. The capture of the digital images can be actuated by the
10 function control buttons 208, through touch sensitive activation through the display 204 by a dedicated "shutter" not shown, or voice activation. Other functions, such as camera mode, resolution, and other familiar operations can be controlled on the full-screen through the computer subsystem of the handheld computer portion of the device.

Comparable with the first embodiment described in Figures 1A, 1B, and 1C,
15 the portable device 200 can operate in concert with a network station as shown in Figure 1C. A network station can be crafted to omit the speakers 134 (Figure 1C) or a media player could be added to the combination of the handheld computer, player, and digital camera in the portable device 200 which can drive speakers 134 (Figure 1C) of the network station. Absent a media player, however, considering Figure 1C, docking the portable
20 device with the network station would allow for easy transmission of music, content, data, and digital images over the Internet or storage of such types of content to a storage device 168 (Figure 1C) in the network station. Similarly, the network station 130 could allow the portable device 200 to retrieve images from storage so that they could be shown on the display 204 of the portable device 200 when it is docked in the network station 130 (Figure
25 1C) or in a portable viewer mode. A power supply 176 in the network station could be used to power or recharge the portable device 200 as well.

Another embodiment of the present invention is a network station 330 similar to that described in Figures 1A, 1B, and 1C, which is responsive to telemetry, such as that made possible by RF polling and RFID tags which can be carried by users or

incorporated in any other type of portable or attachable device. Figure 3 shows a personal device 300 docked and integrated with a network station 330. Again, the network station 330 has a display screen 332, function control buttons 338, and a network station interface (not shown). The network station 330 also has one or more a portable device interfaces (not shown) for supporting a detachable digital camera 350, a radio or Internet radio 354, and a cassette player 358, speakers 334, and various forms of data storage (not shown). In addition, the network station 330 is equipped with a telemetry transceiver (not shown). In the embodiment shown in Figure 3, RF is used, and the network station 330 is equipped with an RF transceiver (not shown) joined with an RF antenna 340. The system shown also comprises at least one RFID tag 360, which, for example, might come with a key ring 364 so that a user can carry the RFID tag 360 with his keys 368, and not have to carry an additional item to take advantage of the functions afforded. Comparably, the RFID tag could be worn as a charm on a necklace or bracelet, carried in a wallet or purse, or carried by a user in another way.

The operation of the system in the embodiment shown in Figure 3 is the same as the system described in Figures 1A, 1B, and 1C, but with added function provided by the telemetry. In the embodiment shown, the RF transceiver sends a polling signal through its antenna 340. If an RFID tag 360 known to the system is within proximity, the RF transceiver receives a responsive signal. The system is able to respond to the presence of the RFID tag 360 to provide user preferences to the user, the content being preprogrammed to match the user's preferences. If, for example, the user likes to check a certain Internet site regularly, such as e-mail, the network station 330 could connect with the network, access that information, and display the information on the display screen 332 or audibly read the information without any direct user interactions. If there is a certain type of music the user likes which the network station has stored in its storage devices or can access over the Internet, that too can be provided to the user. Therefore, merely by the RFID tag 360 entering the proximity of the network station 330 or remote interface to the network station, the user can be provided with desired information or media automatically.

Certainly, the system can be programmed to respond to different RFID tags 360 with different content geared to the tastes of the person carrying each RFID tag 360.

In the embodiment of the invention shown in Figure 3, specific control logic to poll for and identify RFID tags 360 and identify the RFID tag 360 holder to the system
5 could be implemented in the network station. In the latter case, the system could provide automatic recognition and response steps when the portable device 300 is not docked with the network station 330, although network operations would not be possible.

Another embodiment of the invention is shown in Figures 4A and 4B. Instead of the portable device comprising the media player and the handheld computer as in
10 the embodiment shown in Figures 1A, 1B, and 1C, in this embodiment the removable device 400 is basically the display of the system. The removable device operates as a handheld, touch-sensitive, keyboard-operated, mouse-operated, or voice controlled computer when undocked from the network station 430 as shown in Figure 4B. The integrated system of the removable device 400 and the network station 430 shown in Figure
15 4A supports all the functionality as the system shown in Figure 1B. As shown in Figure 4B, the removable device 400, which features a network station interface (not shown) functions separately as a handheld computer, which can access network content when docked with the network station 430. In this embodiment, because the removable device 400 is just a display, all localized control is implemented by touch sensitive icons on the
20 display itself and function control buttons 450. Coupling the removable device with the network station 430 allows for the handheld device to serve as a clock, media display, etc., while docked with the network station 430.

Figure 5 shows an additional embodiment of the present invention. The portable device 500 is a combined media player, digital camera, and handheld computer,
25 comparable to that of the portable device shown in Figure 1A. This portable device 500 offers the same functions and controls, having a display 504 capable of showing media player information 512 and handheld computer information 516, function control buttons 508, and scroll buttons 520. A camera lens 530, disposed on the opposite face of the device
from the display 504 for ease of composition on the display 504. A difference in this

embodiment is that, built into the portable device is a network interface port 550 which allows the portable device 500 to couple with a network (not shown). Accordingly, by moving this function into the portable device 500, a network station is not needed. With only a cord or cable from a cordless link added to the portable device 500, the portable device can access network content which can be viewed on the display or heard through an added listening device (not shown). A modem (not shown) could be incorporated into the portable device to allow a user to access network content wherever she has a wired connection or an operable wireless connection to a network.

Figures 6A and 6B show a further embodiment of the present invention.

Figure 6A shows the back of a portable device 600 which is comparable to those shown in Figures 1A, 2A and 2B, and 5. On the back of the device, where presumably there is neither a display or function keys with which it would interfere, an indentation 650 is included in the casing of the portable device 600. As shown in Figure 6B, this indentation allows a user 680 to insert the pointer finger 670 of his or her hand to get a better grip on the portable device 600. Currently used devices have belt clips and straps which project outward from the device, take up space, and are inconvenient and cumbersome to use; to the contrary, the embodiment shown in Figure 6B requires no such strap or clip, and affords the user an angled grip across the casing of the portable device 600, while at the same time allowing the user to make button selections with the users' thumb of the same hand.

Figures 7A and 7B show a further embodiment of the present invention. Figure 7A shows the back of a portable device 700 which is comparable to those shown in Figures 1A, 2A and 2B, and 5. On the back of the device, where presumably there is neither a display or function keys with which it would interfere, a flexible finger extension 750 is attached by its broad case to the casing of the portable device 700. This extension 750 allows a user 780 to insert one or more fingers 770 of his or her hand to get a better grip on the portable device 700. As shown in Figure 7B, the extension 770 is mounted perpendicular to the casing. However, as shown in Figure 7C, it deforms to snugly enshroud the user's finger to better secure the portable device 700, while at the same time allowing the user to make button selections with the users' thumb of the same hand.

From the foregoing it will be appreciated by one ordinarily skilled in the art that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the
5 appended claims.

CLAIMS

1. A network communications entertainment device, the device comprising:
 - a removable network communications control device comprising
 - a handheld computing device, the handheld computing device comprising:
 - a processor;
 - a memory system coupled with the processor;
 - a user control interface coupled with the processor, the user control interface allowing the user to direct operations of the handheld computing device;
 - a display screen coupled with the processor, the display screen being operable to display at least one of text, numeric, or graphics content, and providing information to a user concerning operations of the handheld computing device; and
 - a device interface allowing the handheld computing device to exchange information with another device;
 - a media player coupled with and controllable by the handheld computing device, the media player comprising:
 - an audio generation system for translating the audio information loaded into the media player by at least one of transferred electronic files or interchangeable audio storage devices into sound signals; and
 - an audio output mechanism receiving the sound signals generated by the audio generation system and allowing the user to hear content of the sound signals through a transducer; and
 - a network station operable to couple with the removable network communications control device interface, comprising:
 - a removable network communications control device operable to couple with the interface allowing the removable network communications control device to exchange data with the network communications and entertainment hub system;
-

a network interface coupled with the removable network communications control device interface allowing the removable network communications control device to interface directly with a network to receive data without the use of an intermediary computing system; and

an audio transducer coupled with the removable network communications control device interface allowing the user to hear the content of the sound signals.

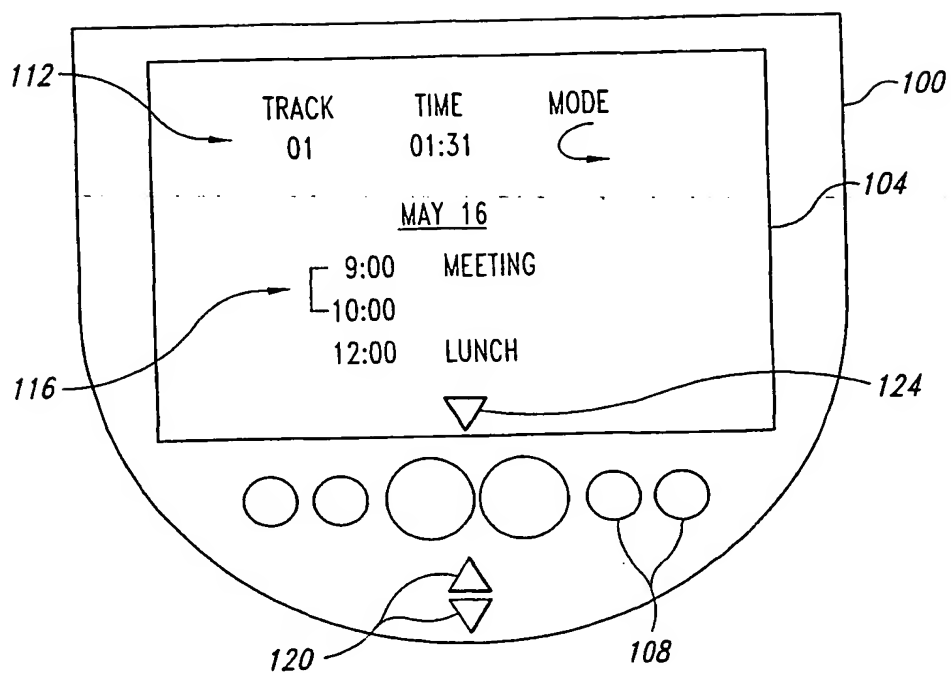


Fig. 1A

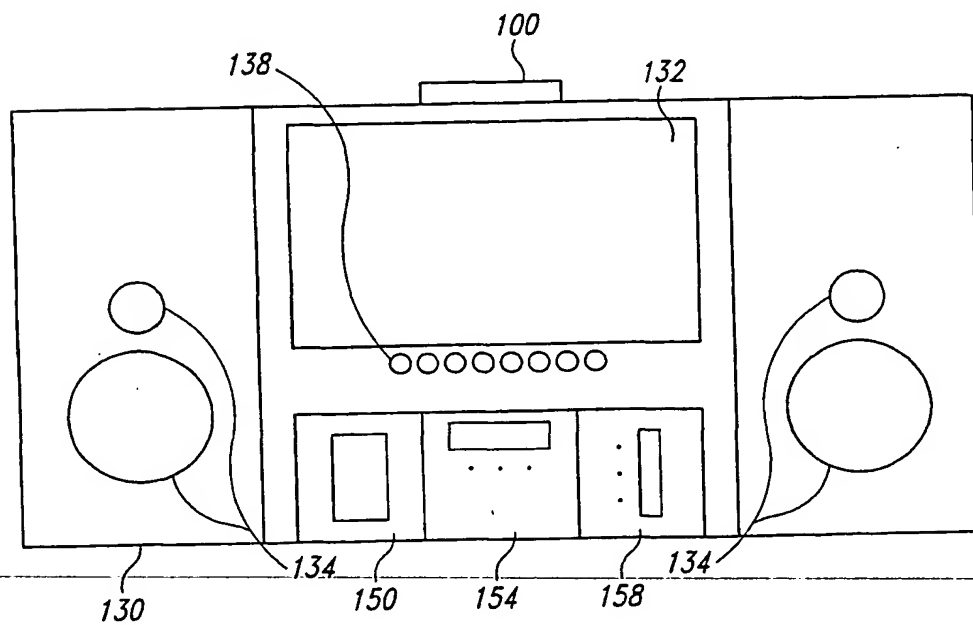
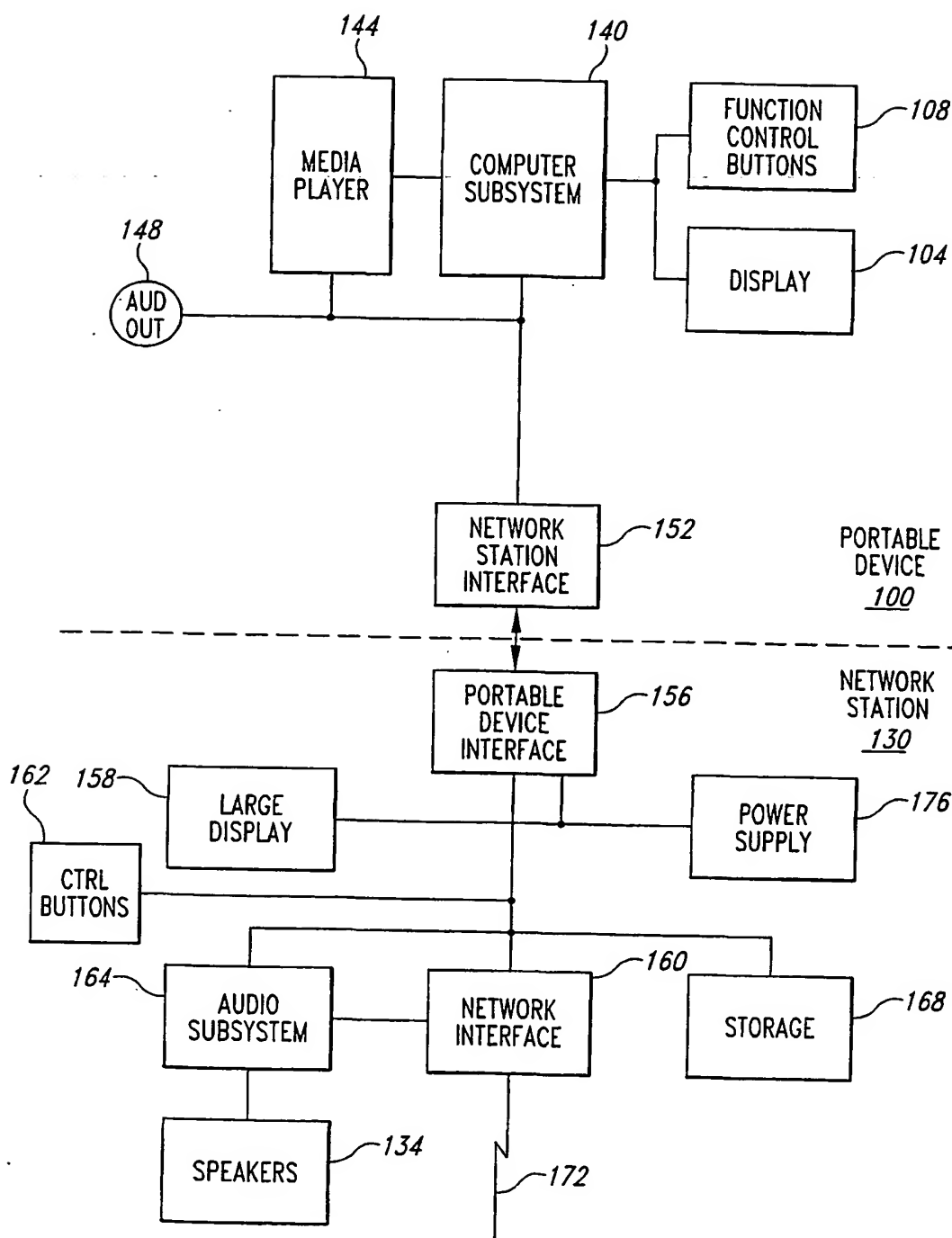
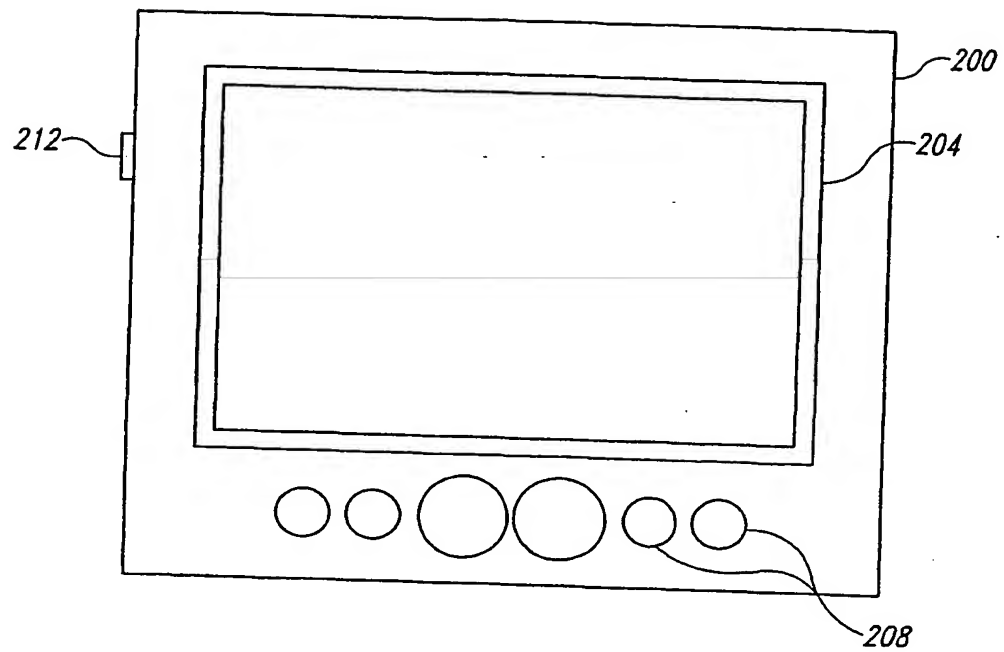
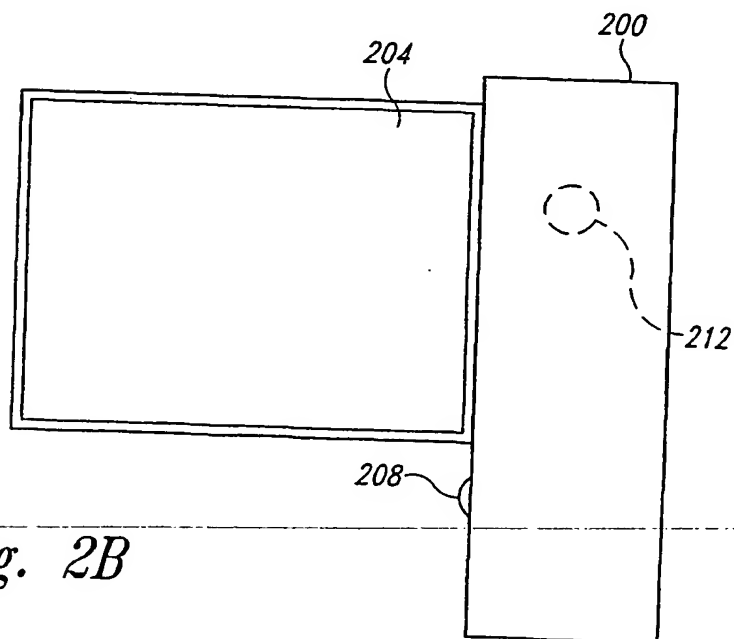
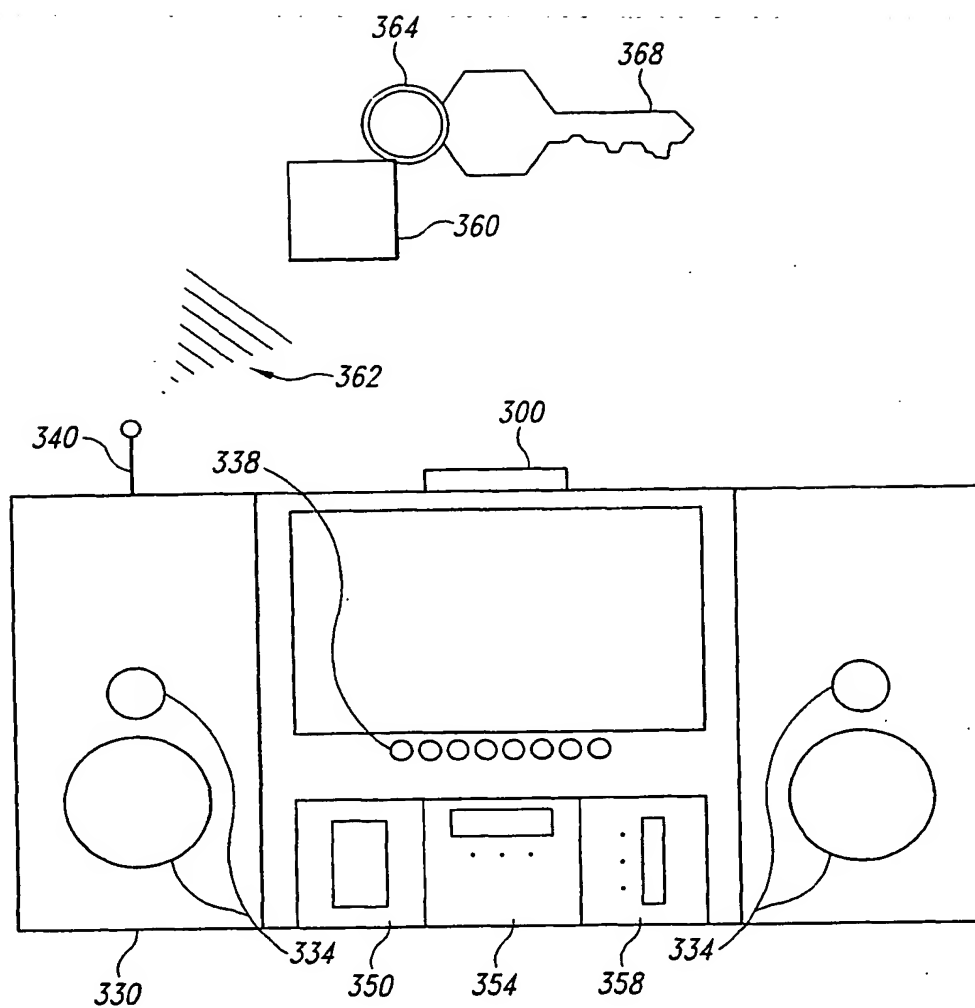
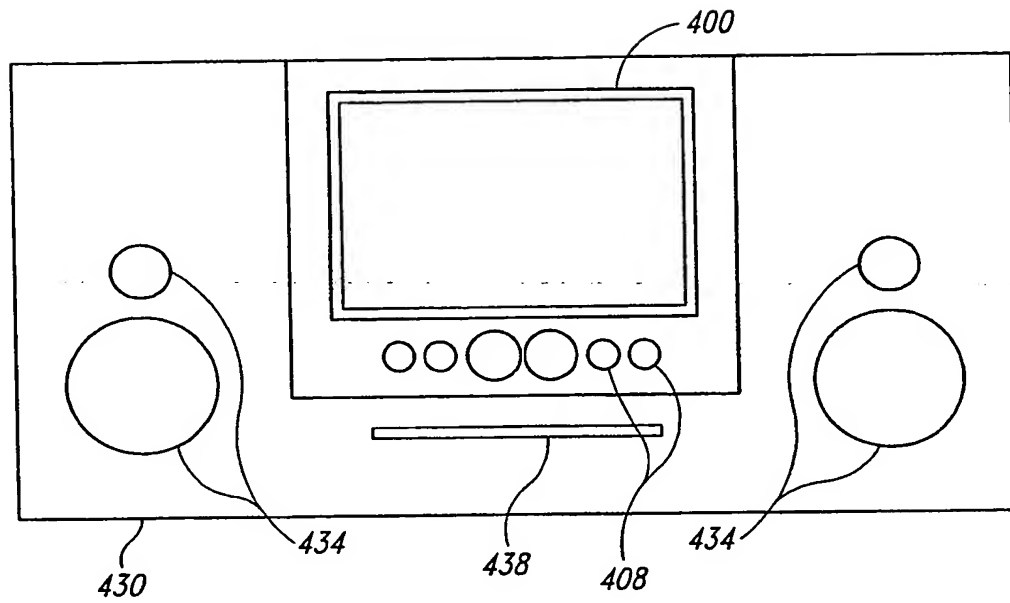
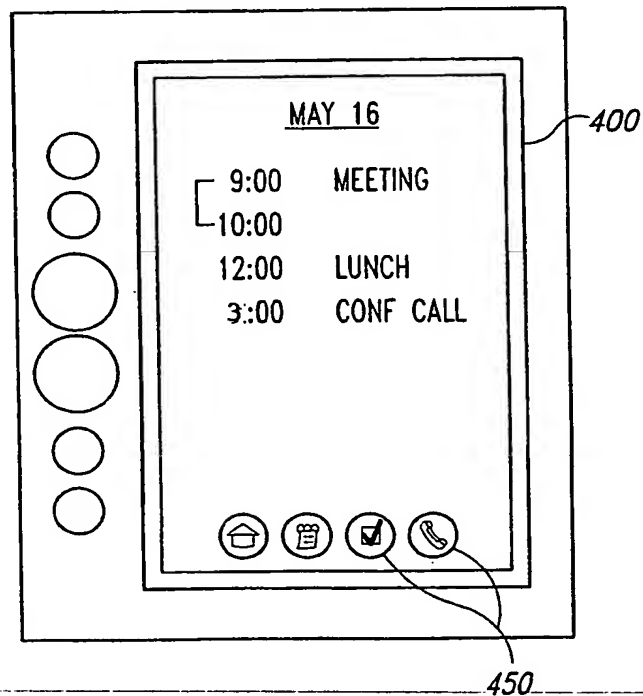


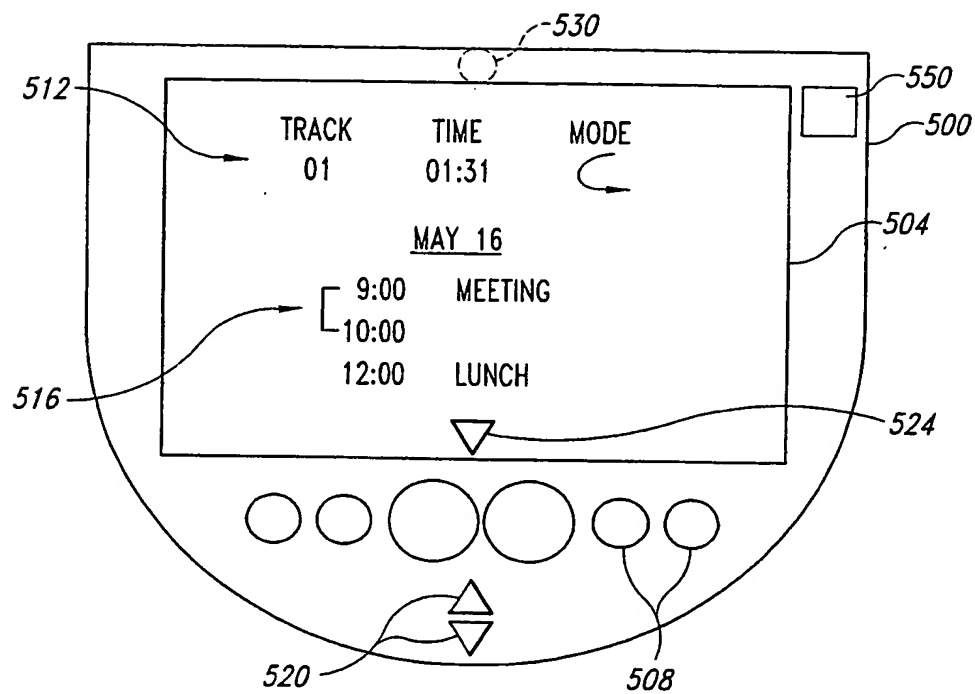
Fig. 1B

*Fig. 1C*

*Fig. 2A**Fig. 2B*

*Fig. 3*

*Fig. 4A**Fig. 4B*

*Fig. 5*

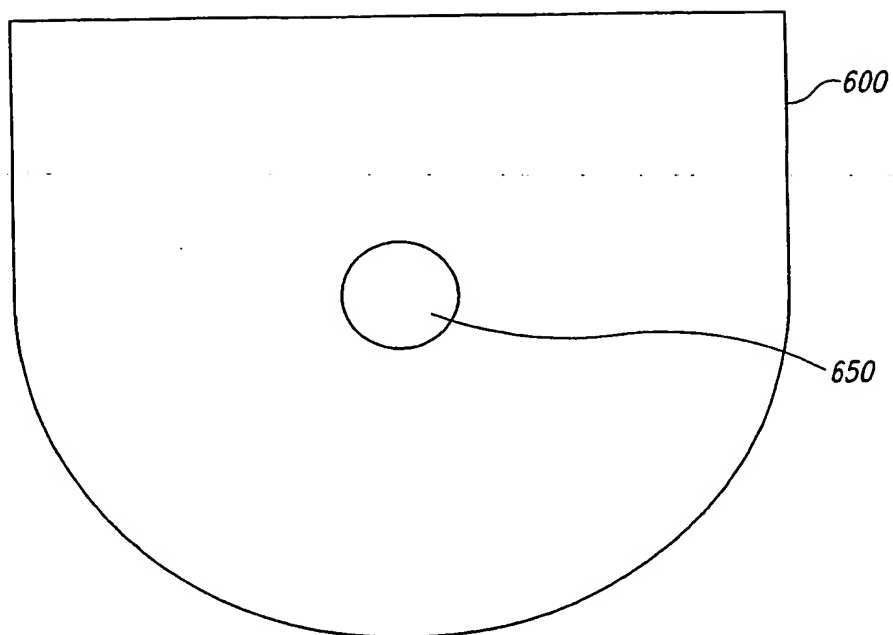


Fig. 6A

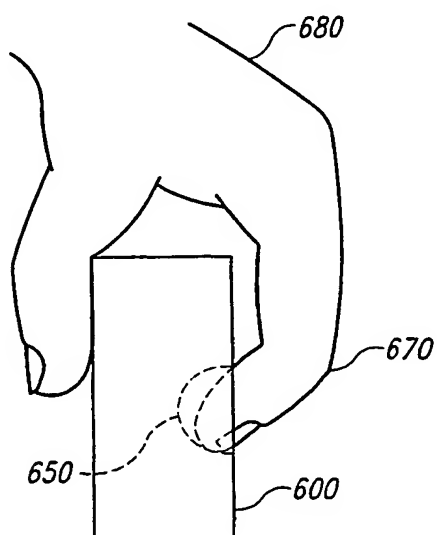


Fig. 6B

SUBSTITUTE SHEET (RULE 26)

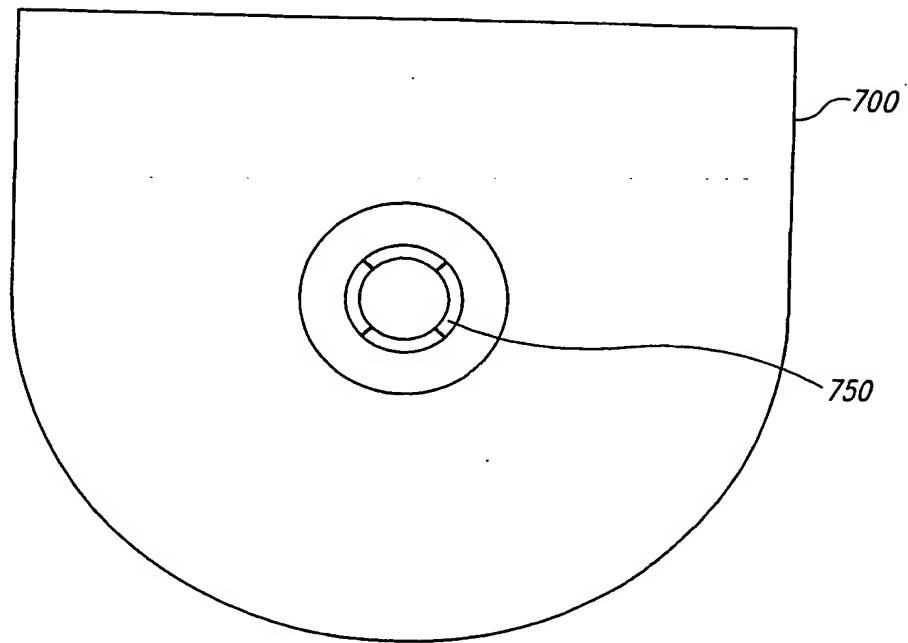


Fig. 7A

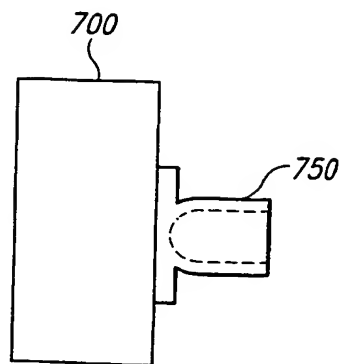


Fig. 7B

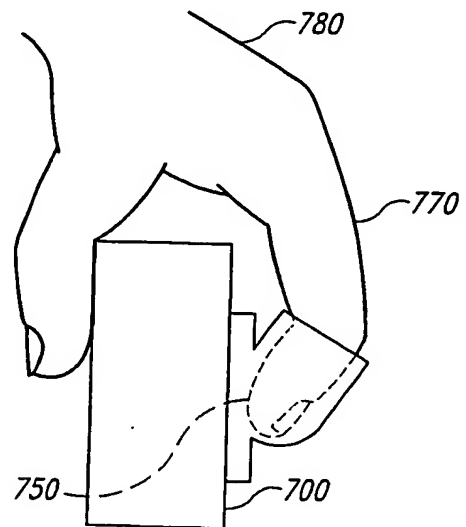


Fig. 7C

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/22803

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63F 13/00

US CL : 463/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 463/1, 42, 44, 46, 47

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,042,478 A (NG) 28 March 2000 (28.03.2000), see entire document.	1
X,P	US 6,267,678 B1 (KUBO et al) 31 July 2001 (31.07.2001), see entire document.	1
Y	US 5,428,528 A (TAKENOUCI et al) 27 June 1995 (27.06.1995), see entire document.	1
Y	US 5,095,798 A (OKADA et al.) 17 March 1992 (17.03.1992), see entire document.	1
Y	US 5,161,803 A (OHARA) 10 November 1992 (10.11.1992), see entire document.	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

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"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

23 September 2002 (23.09.2002)

Date of mailing of the international search report

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